

The AWA Journal

Quarterly Bulletin of the Antique Wireless Association®

January 2016, Vol. 56 / #3

Announcing a New Product!

Designed for Reliable
Long Distance Communication

on

1 Meter to 200 Meters

INPUT RATING 150 WATTS

Plate Voltages 1000-3000

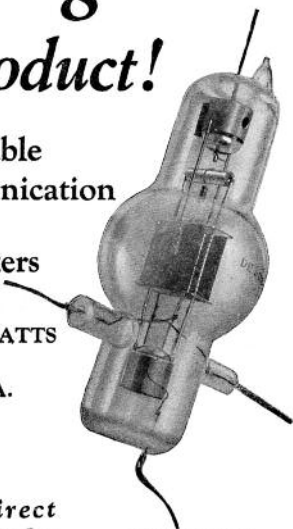
Plate Currents 40-50 MA.

Fil. Voltage 10

Fil. Current 2.35A

*Sold and Shipped Direct
Upon Receipt of Money Order*

Price, \$18.00



DE FOREST TYPE-H

TRANSMITTING TUBE

DE FOREST RADIO CO., 120 Sherman Ave., Jersey City, N. J.

From "What's 'de' Story on the Spelling of Lee De Forest?"
(See p. 36)

*Published for the radio collector,
historian, restorer and all
vintage communications enthusiasts.*

**CONVENTION 2015
RETROSPECTIVE ISSUE**

Originally published as

THE OLD TIMER'S BULLETIN

OFFICIAL JOURNAL, ANTIQUE WIRELESS ASSOCIATION™

BRUCE L. KELLEY 1914-1997, FOUNDING EDITOR

Antique Wireless Association is a trademark of the Antique Wireless Association

OFFICERS

DirectorTom Peterson, Jr.
Deputy Director....Robert Hobday
Curator.....Bruce Roloson
SecretaryDr. William Hopkins
TreasurerStan Avery

TRUSTEES

Stanley Avery, WM3D
David Bart, KB9YDP
Lynn Bisha, W2BSN
Geoffrey Bourne
Marc Ellis, N9EWJ
Dr. Thomas Ely, W2ODW
Robert Hobday, N2EVG
Prof. William Hopkins, AA2YV
David Kaiser
Felicia Kreuzer, KAZGXL
James Kreuzer, N2GHD
Richard Neidich
Thomas Peterson, Jr.
Ronald Roach, W2FUI
Bruce Roloson, W2BDR
John Terrey, W5TDQ
Morgan Wesson
Roy Wildermuth, W2IT

MEMBERSHIP SERVICES COMMITTEE

ChairmanRichard Neidich
AWA Journal Editor.....Marc Ellis, N9EWJ
AWA Review EditorRobert Murray*
Conference Chairman ...Roy Wildermuth, W2IT
*Ex Officio Members

CONFERENCE COMMITTEE

ChairmanRoy Wildermuth, W2IT
Equipment Contest ...Geoffrey Bourne
Chris Bacon
Programs.....Roy Wildermuth, W2IT
Auction Manager.....Richard Neidich
Bruce Roloson
Photos.....Richard Ransley
Hotel.....Bruce Roloson, W2BDR
Bob Hobday, N2EVG
RegistrationDan and Sue Waterstraat

HONORARY MEMBERS

Anthony Constable
Bro. Patrick Dowd, F.S.C., W2GK
Ed Gable, K2MP
Randolph W. Haus, KB2PLW
Lauren Peckham
Don & Joyce Ray
Bruce Roloson
Elliot Sivowitch
Sherwood M. Snyder, W2KFU
William B. Fizette, W2DGB



Website: www.antiquewireless.org

Special Conference Website: www.awaconference.com

Antique Wireless Association is an IRS 501(c)3 charitable organization. ISSN 1937-1810

AWARDS ADMINISTRATORS

AWA Houck AwardBarney Wooters
Bruce Kelley-OTB Award...Bruce Roloson, W2BDR
Equipment Awards.....Geoffrey Bourne

J. Albert Moore AwardGeoffrey Bourne
Taylor AwardPete Yanczer
Tyne Award.....Joe Knight
Television AwardRichard Brewster

WHOM TO CONTACT

Please write legibly. Enclosing an SASE speeds replies.

DUES AND ADDRESS CHANGES: AWA Membership, P.O. Box 421, Bloomfield, NY 14469-0421; (585) 657-6646 Caroline MacMillen; e-mail awamembership@rochester.rr.com. Dues: \$35 per year in U.S.; \$40 elsewhere. Life membership: \$700 in U.S.; \$800 elsewhere. Make checks payable to "AWA."

AWA OFFICIAL BUSINESS: Bob Hobday, Deputy Director, Box 421, Bloomfield, NY 14469-0421 or N2EVG@arrl.net

AWA JOURNAL & AWA GATEWAY SUBMISSIONS: Marc Ellis, Editor, AWA Journal, 1914 Colfax St., Evanston, IL 60201, (847) 869-5016, e-mail: mfellis@alum.mit.edu.

AWA REVIEW SUBMISSIONS: Robert Murray, Editor AWA Review, 605-1000 Beach Ave., Vancouver, BC, Canada V6E 4M2, e-mail rob3045@telus.net, tel 604-669-3045.

ORDERS FOR THE AWA REVIEW OR BACK ISSUES OF THE AWA JOURNAL: See back cover.

CLASSIFIED ADS: Richard Ransley, 25 Smith St., Sodas, NY 14551-1007, (315) 483-9307.

ANNUAL CONFERENCE BUSINESS: Roy Wildermuth, W2IT, 45 Old Forge Lane, Pittsford, NY 14534-4331, w2it@awaconference.com

FINANCIAL REPORTS: Antique Wireless Association, Box 421, Bloomfield, NY 14469-0421

ANTIQUÉ WIRELESS MUSEUM: Please see "At the Museum" column for contact and administration information.

AWA JOURNAL STAFF

Editor

Marc F. Ellis, N9EWJ

Design & Production

Claudia Gray Sweet

CONTRIBUTING EDITORS

Amateur Radio

Tim Walker, W1GIG

The Back Page

James Kreuzer, N2GHD

Book Reviews

Eric P. Wenaas

Classified Ads

Richard Ransley

The Communications Receiver

Barry Williams, KD5VC

Equipment Restoration

Dan Merz

The Item In Question

William Hopkins, AA2YV

Key & Telegraph

John Casale, W2NI

The Museum

Bruce Roloson, W2BDR

Obituaries

Charles Griffen, W1GYR

Radio Ramblings

Jim Cook, W0OXX

Radio Rehab 101

Richard A. Parks

Television

Richard Brewster

The Vacuum Tube

Ludwell A. Sibley

The AWA Journal is published approximately four times a year by and for members of the Antique Wireless Association. AWA is a non-profit historical society founded in 1952 and incorporated in the State of New York. The AWA Journal is available through AWA membership. Its issuance is subject to change from time to time as to frequency, content, and size. It is not liable in any way for any buying-and-selling transaction entered into as a result of its content.

© 2016 Antique Wireless Association

© 2016 Antique Radio Club of America

CONTENTS

2015 CONVENTION RETROSPECTIVE

- 25 Auction Report
- 26 Seminar Snapshots
- 28 Selected Blue Ribbon Winners
- 30 Awards Report
- 32 Complete Contest Winner List
- 34 Convention Candids

AT THE MUSEUM

- 9 From the Curator and Operations Manager Bruce Roloson, W2BDR and Ron Roach, W2FUI
- 11 The Item in Question William Hopkins, AA2YV
"The Only Girl Inventor in Radio"

FEATURE ARTICLES

- 36 What's "de" Story on the Spelling of Lee De Forest? Eric P. Wenaas
Part III. Author's and Editor's Dilemma
- 45 Tracing the Birth of RCA Michael W. Marinaro, WN1M
Its creation required an intricate exchange of preferred stocks and cross-licensing agreements

COLUMNS

- 6 Membership News Staff
- 10 Amateur Radio Tim Walker, W1GIG
Ham Events Past and Future
- 14 Books and Literature Eric P. Wenaas
- 17 Recent Radio, TV and Entertainer Obituaries Charles S. Griffen, W1GYR
- 22 The Vacuum Tube Ludwell A. Sibley
Vapor Cooling For Power Tubes — Dissolving Tube Base Cement
- 49 Radio Ramblings Jim Cook, W0OXX
Tuning Radio Transmitters with Neon Lamps
- 52 Equipment Restoration Dan Merz
Restoring Transistor Radios
- 56 Radio Rehab 101 Richard A. Parks
The Western Electric 100-F Amplifier
- 57 Television Richard Brewster
Vladimir Zworykin's Lab Notebooks
- 60 Key and Telegraph John Casale, W2NI
*A Western Union/Phelps Combination Set and
The Haskins Brothers of Littleton, New Hampshire*
- 64 The Back Page Jim Kreuzer, N2GHD
Interesting Images From the AWA Museum Archives

DEPARTMENTS

- | | | |
|---------------------|----------------------------|-----------------|
| 4 From the Editor | 5 From the Deputy Director | 63 Museum Store |
| 4 About Our Authors | 51 Classified Ads | |

FROM THE EDITOR

Here, at last, is the issue of the *Journal* you've been expecting since last fall—full of news about the AWA Convention. Those who attended that event, and who perhaps live in colder climes, may enjoy memories of inspecting vintage radios under the warm August sun. That probably isn't enough to make up for the lateness of the issue, for which I apologize. It was caused by illnesses that struck both myself and my wife, definitely impacting on our abilities to function effectively. But all that has passed and my goal now is

to release five issues by the end of this year, completing volumes 56 and 57 so that everyone will receive four issues per one-year subscription. In the meantime, please enjoy the excellent reading to be found in this January issue.

On another matter, Barry Williams, who is traveling on business, was unable to submit his Communication Receiver column for this issue. But he'll be back in the next issue with an article about the 75S2 extended coverage receiver by Collins.

—MFE

ABOUT OUR AUTHORS

MICHAEL W. MARINARO, WN1M

Tracing the Birth of RCA

Michael Marinaro was first licensed in 1952 as KN2CRH and has been licensed continuously since then, currently holding extra class license WN1M. Previous calls were K2CRH, W5RBB and W1HNJ.

Michael is a graduate of the City University of New York and recently earned a masters degree in History, with honors, from Central Connecticut State University. He is retired from the financial services industry.

Marinaro has authored two recent articles which appear on the Connecticut Humanities Council website <http://www.ConnecticutHistory.org>. "A Diversified Mind: Hiram Percy Maxim" and "Amateur Radio Comes of Age in Connecticut" (a brief history of the ARRL). WN1M operates on all the HF bands in all modes with four stations. A Collins Radio enthusiast, he operates an "S line" and a classic model 51J4 receiver.

Marinaro is a member of the Collins Radio Association, the Antique Wireless Association and has been a ARRL member for more than forty years. Operating awards include DXCC on seven bands and the CHALLENGE. As volunteer staff curator and historian at the ARRL, Marinaro is involved in

organizing the League's collections.

ERIC P. WENAAS

What's "de" Story on the Spelling of Lee De Forest? Part III. Author's and Editor's Dilemmas

Eric Wenaas has had a lifelong passion for antique radios, beginning with his first Radiola and crystal set given to him by family friends as a young man growing up in Chicago. He experimented with radio devices and repaired radios and televisions as a hobby while in high school. He then studied electrical engineering at Purdue University, graduating with B.S. and M.S. degrees. Wenaas went on to the State University of New York (SUNY) at Buffalo where he earned a Ph.D. degree in Interdisciplinary Studies in the School of Engineering. After graduating, he spent most of his career at Jaycor, a defense company in Southern California—first as an engineer and later as the President and Chief Executive Officer.

Upon his retirement in 2002, he set out to research the early days of wireless and document interesting historical vignettes based on original materials of the era. He has written numerous articles for the *AWA Review*, the *AWA Journal* and *Antique*

FROM THE DEPUTY DIRECTOR

Greetings and Happy Holidays! Construction is nearly complete on Phase II of the Museum thanks to generous donations from 230 members. Bruce Roloson and his display design team are busy creating the displays. This new phase will double the size of the Museum display space. I can't wait to show it to you.

Do you buy items on Amazon.com? Well, who doesn't? When you shop at AmazonSmile, Amazon donates 0.5% of the purchase price to Antique Wireless Association. Bookmark the link <http://smile.amazon.com/ch/16-1501004> and support us every time you shop.

It is really easy. Just go to Smile.Amazon.com and designate the Antique Wireless Association (EIN: 16-1501004) for the AWA to receive 0.5% of your eligible total purchases. You only have to designate the AWA once, but EVERY TIME you want to make an Amazon purchase, sign in using Smile.Amazon.com. It is just that easy to support the AWA and it does not cost you anything extra.

DVD: The Arthur A. Collins Legacy: A Culture of Innovation

This 24 minute documentary DVD, two years in the making, provides a unique insight into Arthur Collins, founder of Collins Radio, emphasizing the remarkable culture of innovation he created at the firm. The

Collins culture of excellence in innovation stemmed from a challenging work environment that attracted aspiring engineers who sought not the highest salary but rather the opportunity to make dramatic advances in state-of-the-art electronics.

Ironically, for an expert in communication Arthur Collins was a shy person outside his immediate cadre of engineers and close friends, and avoided personal publicity. However, the documentary contains collected interviews from those who knew and worked with him. Their open and candid remarks are spiced with fascinating stories of his prescient vision into future technology, his breath of expertise, and his extraordinary ability to absorb knowledge.

The Antique Wireless Association is pleased to have collaborated with the Arthur A. Collins Legacy Association to produce this documentary on the legacy and the legend of Arthur Collins as captured in words of those who lived, worked, and knew Art and shared his passion for excellence.

This unique DVD is a production of the Antique Wireless Association and the Arthur A. Collins Legacy Association. Copies may be ordered for \$15 each from the AWA Museum Store at www.antiquewireless.org. And while you are visiting the AWA Museum Store web page, take advantage of this excellent opportunity to order AWA merchandise for holiday gifts.

— Bob Hobday N2EVG

Radio Classified. In 2007, he published the critically acclaimed book *Radiola: The Golden Age of RCA—1919-1929*. It covered the early history of RCA and included the formative years of the Marconi Telegraph Company of America. For this work, he received the AWA Houck Award for

Documentation in 2007. He is a lifetime member of the AWA and a past member of both the IEEE and the American Physical Society. Dr. Wenaas resides in Southern California and continues to enjoy collecting radios, researching the early days of wireless and writing articles.

MEMBERSHIP NEWS



AWA JOURNAL POLICY ON PROMOTING EVENTS: The *AWA Journal* is pleased to list the meets and meetings of any established antique radio organization, whether or not it is associated with the AWA. Send your information to Marc Ellis, Editor, *AWA Journal*, P.O. Box 1306, Evanston, IL 60204-1306. E-mail mfellis@alum.mit.edu.

Information About AWA and Other Events

AWA SPRING MEET

May 7

At the old AWA Annex grounds: 6920 Routes 5&20 intersection with Route 444. Flea market, opportunity to visit the AWA Museum, large auction of surplus artifacts from the museum, tailgating. More information in the next *Journal* issue and at www.antiquewireless.org as it becomes available.

AWA ANNUAL CONVENTION

Thursday, Aug. 18 to Saturday, Aug. 20

At the Rochester Institute of Technology Inn at Henrietta, NY. Renew old friendships, make new friends, buy and sell at the flea market, attend the fascinating seminars and presentations, dine at the banquets. Visit the AWA Museum. More information in the next *Journal* issue and at www.antiquewireless.org as it becomes available.

Recurring Meetings

- The Antique Radio Club of Illinois (ARCI) — Meets bi-monthly. Meets generally held at the American Legion Hall, Carol Stream IL but meets in June in conjunction with the 6-Meter Club of Illinois at the DuPage County Fairgrounds and once per year for Radiofest at the Willowbrook Illinois Holiday Inn. Check website for schedules, details and maps.) Contacts: President, Olin Schuler oshuler@comcast.net; Club Public Contact, Art Bilski, 630-739-1060, clubinfo@antique-radios.org. Website www.antique-radios.org.

- Antique Radio Collectors of Ohio — meets first Tuesday of each month at 2929 Hazelwood Ave., Dayton, OH (4 blocks

east of Shroyer Rd. off Dorothy Lane) at 7 p.m. Also annual swap meet and show. Membership: \$10.00 per year. For more info, contact Karl Koogler: mail to above address; phone (937) 294-8960; e-mail KARLKRAD@GEMAIR.COM.

- California Historical Radio Society — For info on current meetings, call the CHRS hotline: (415) 821-9800.

- CARS, the Cincinnati Antique Radio Society — Meets on the third Wednesday of each month at Gray's History of Wireless Museum, which is part of The National Voice of America Museum of Broadcasting, Inc., located in a building that is now on the National Historic Register at 8070 Tylersville Road, Westchester, Ohio. 45069. For more information contact Bob Sands at (513) 858-1755.

- Carolinas Chapter of the AWA — Hosts four "mini-swap-meets" each year (in January, May, July and October) plus an annual conference, "Antique Radio Charlotte," on the 4th weekend in March. Executive committee meets approximately quarterly. For more info, visit the website at CC-AWA.ORG or contact Ron Lawrence, W4RON, Chapter President, P.O. Box 3015, Matthews, NC 28106-3015; phone (704) 289-1166; e-mail W4RON@carolina.rr.com.

- Central Ohio Antique Radio Assn. — Meets on the third Wednesday of March, June and September at 7:30 p.m. Swap meets: "Cabin Fever" in January and outdoor tailgate in July. December Christmas party. For more info contact Barry Gould at 614-442-1518 or Dave Poland at 614-890-5422 or <http://coara.org/>.

- Delaware Valley Historic Radio Club — Meeting and auction begins 7:30 p.m. on the second Tuesday of each month. Location: Telford Community Center on Hamlin Ave. in Telford, PA. Annual dues: \$15.00, which includes a subscription to the club's monthly

newsletter *The Oscillator*. For more info contact Delaware Valley Historic Radio Club, P.O. Box 5053, New Britain, PA 18901. Phone (215) 345-4248.

- Houston Vintage Radio Association (HVRA) meets the fourth Saturday (January thru October) at Bayland Park 6400 Bissonnet, 9 a.m. in SW Houston. Each meeting includes an auction and program. Annual two-day convention held in February includes three auctions, old equipment contest, technical talks, swap meet, and awards banquet. One day MEGA auctions held in the spring and fall. A newsletter, *The Grid Leak*, is published bi-monthly. Event postings, announcements, photos and other features are available on HVRA website: www.hvra.org. Membership is \$20/yr. Address: HVRA, P.O. Box 31276, Houston TX 77231-1276 or call Bill Werzner, 713-721-2242; email: werz1943@gmail.com.

- Hudson Valley Antique Radio and Phono Society [HARPS] meets the 3rd Friday of the month 7:30PM at the Episcopal Church of Suffern Annex, 65 Washington Ave., Suffern N.Y. 10901 for info contact Rev. Dale Cranston at (845) 357-1615 or dale.cranston@gmail.com.

- Indiana Historical Radio Society — Active since 1971. Meets in Feb. (Lawrence), May (2-days, Kokomo) and Oct. (Greenfield). Flea market, old equipment contest, and auction at all events. Meet details and club info at website www.indianahistoricalradio.org. \$15.00 annual dues includes the IHRS Bulletin published quarterly. Contact Herman Gross, W9ITT, 1705 Gordon Dr., Kokomo, IN 46902, 765-459-8308, email w9itt@comcast.net.

- London Vintage Radio Club — This Ontario, Canada club meets in London on the first Saturday of January, March, May, and November. Annual flea market held in Guelph, Ontario in June. Contact: Dave Noon, VA3DN, 19 Honeysuckle Cr., London, ON N5Y 4P3, Canada. Email: va3dn@execulink.co. Website: <http://lvrc.homestead.com/index.html>.

- Mid-Atlantic Antique Radio Club (MAARC) — Meets monthly, usually on the third Sunday of the month at the Davidsonville Family Recreation Center in David-

sonville, MD. (But meets once or twice a year in Northern Virginia—check website for schedules, details and maps.) Contacts: President, Steve Hansman, 855 Arundel Drive, Arnold, MD 21012, (410) 974-0561, email: shans01a@comcast.net; Membership Chair, Geoff Shearer, (703) 818-2686, email: gshearer2@verizon.net. Website www.maarc.org.

- The New Jersey Antique Radio Club — Meets the 2nd Friday of the month 7:30 p.m. at either Info Age 2201 Marconi Rd. Wall Township N.J. 07719 or Bowen Hall, Princeton University. We hold three annual swap meets and four seasonal repair clinics. Visit the club's website for details www.njarc.org or contact NJARC President Richard Lee (914) 589-3751 or president@njarc.org.

- Northland Antique Radio Club (Minneapolis/St. Paul) — hosts four events with swap meets each year (in February, May, September and November) including an annual conference, "Radio Daze," for two days in mid-May. Annual dues are \$12.00, which includes a subscription to the club's quarterly newsletter. For more info, visit our website at www.northlandantique-radioclub.com.

- Northwest Vintage Radio Society — Meets the second Saturday of each month at Abernethy Grange Hall, 15745 S. Harley Ave. Oregon City, OR. Meeting starts at 10:00 a.m. Membership \$25.00 per year.

AWA NETS (EASTERN TIMES)

SUNDAY:

7237 kHz, SSB, 12 noon, NCS: Various
3840 kHz, AM, 7PM held only during EDT
3837 kHz, AM, 4PM held only during EST
NCS: Joe, W3GMS

MONDAY:

1945 kHz, SSB or AM, 8PM, NCS: N3IBX

MONDAY-WEDNESDAY-FRIDAY:

The AWA Bruce Kelley Memorial Net
3837 kHz, SSB, 9:30AM
NCS Monday, Jeff-W3JW
Wednesday, Roy-W2TWS
NCS Friday, Doug-WA3DSP

Guests welcome at all meetings and functions except board meetings. Spring show, the second Saturday in May. For more information, contact Mike McCrow 503-730-4639; e-mail: tranny53@comcast.net.

- **Oklahoma Vintage Radio Collectors** — Meets second Saturday of each month, (except for April, October, and December), at Hometown Buffet, 3900 NW 63rd St., Oklahoma City, OK. Visitors welcome. Dinner/Socializing, 6 p.m., meeting, 7 p.m. Swap meets on second Saturday in April and October at 8 a.m., Midwest City Community Center, 100 N. Midwest Blvd., Midwest City, OK. Membership \$15/year including monthly *Broadcast News*. Info: contact Jim Collings at (405) 755-4139 or jrcradio@cox.net. Website: www.okvrc.org.

- **Ottawa Vintage Radio Club** — Usually meets the second Wednesday of every month (except July and August) in the Conference Room, Ottawa Citizen, 1101 Baxter Rd., Ottawa, Ontario, Canada. Auctions in October and May. Call Paul Guibord (613-523-1315), or check www.ovrc.org for details.

- **The Pittsburgh Antique Radio Society** welcomes visitors to our Saturday flea markets, contests and clinics held at least four times yearly. A fall auction is included in September and our annual luncheon program is on the first Saturday in December. An annual Tri-State Radio Fest is held in April. Our journal, *The Pittsburgh Oscillator*, is mailed quarterly. For more information visit us at <http://www.pittantiqueradios.org>, email President Chris Wells at radioactive55man@comcast.net, or phone Treasurer Tom Dixon at 412-343-5326.

- **Society for Preservation of Antique Radio Knowledge (SPARK)** — Meets monthly at Donato's Pizzeria, 7912 Paragon Rd., Centerville, OH. Annual swap meet. Membership \$15/yr. Write SPARK Inc., c/o Dan Casey, 10075 Morrow-Rossburg Rd., Pleasant Plain, OH 45162 or call Dan Casey at (513) 265-8466 or e-mail dansradioland@gmail.com

- **Texas Antique Radio Club** — Meets alternate months in Kyle and Shertz, TX. Contact: Doug Wright, 625 Rolling Hills Dr., Canyon Lake, TX 78133. Email:

AWA LIFE MEMBERSHIPS ARE NOW AVAILABLE



Cost: \$700 (U.S.), \$800 (elsewhere.) Make out your check to Antique Wireless Association and send it to AWA Membership, P.O. Box 421, Bloomfield, NY 14469-0421. E-mail awamembership@rochester.rr.com.

dwjw@gvtc.com; website www.gvtc.com/~edengel/TARC.htm.

- **Vintage Radio and Phonograph Society (VRPS)** meets monthly on the third Saturday. Located in the Dallas, Fort Worth Metroplex, our current activities are annual convention, auctions, swap meets, repair training sessions and monthly programs. For details visit our website www.vrps.org, or by contacting VRPS President Jim Sargent at (817) 573-3546 or bsargent@swbell.net.

Convention Doings

Well, we have folded our tents and gone home after another AWA Convention. From the standpoint of quality, presentations and all around entertainment, the convention was a great success. And, as in every previous year, I spent a lot of time soliciting and discussing comments and suggestions from our attendees.

One outcome of these talks is that we have decided to shorten the Convention from four to three days. It will run from Thursday, August 18, 2016 to Saturday, August 20, 2016. We feel that the change in length will increase the opportunity of our friends and members to attend the whole Convention.

I think that most of you will agree that is a positive change. The Auction will still be on Saturday and presentations will occur on Thursday and Friday. By adjusting timing of the events and scheduling I will be able to provide you with the same quality and quantity of content. In fact I took the four-day 2015 schedule and was able to fit it to a three-day 2016 model.

So why not plan on visiting us this year? I really believe you will enjoy it!

Roy Wildermuth

Chairman, 2016 Convention

AT THE MUSEUM

Visit us on the Internet at <http://www.antiquewireless.org>

MUSEUM MANAGEMENT AND STAFF

Thomas Peterson, Jr.
Director

Robert Hobday, N2EVG
Deputy Director

Bruce Roloson, W2BDR
Curator
Accession Committee Chairman

Ronald Roach, W2FUI
Operations Manager

Lynn Bisha, W2BSN
Associate Curator
Assistant Registrar

Alexander MacMillen
Registrar

Warren Wiedemann
Assistant Registrar

Felicia Kreuzer, KA2GXL
Assistant Curator

James Kreuzer, N2GHD
Assistant Curator
Media Librarian

Roy Wildermuth, W2IT
Assistant Curator

Ed Gable, K2MP
Curator Emeritus
Historian

Stan Avery, WM3D
Treasurer
Museum Store Manager

MUSEUM CONTACT

For all inquiries about the Museum and its operation, contact Museum Curator Bruce D. Roloson, W2BDR, Curator, P.O. Box 478, 2 Walnut Place, Apalachin NY 13732, e-mail broloson@stny.rr.com. *The Antique Wireless Association is an IRS 501(c)3 charitable organization.*

***From Bruce Roloson, W2BDR,
Curator, AWA Museum***

PROGRESS PHOTOS — MUSEUM CONSTRUCTION



Building the new teletype and telephone displays.



The new telegraph office under construction.



Reassembling the Voice of America control console.



Western Union signage for the telegraph office.

**From Ron Roach, W2FUI,
Operations Manager, AWA Museum**

The Voice of America station and remote audio center were placed in position in Phase II a week prior to the 2015 AWA Conference. A group of teenage service camp volunteers from St. Benedict Parish in Canandaigua and East Bloomfield spent Tuesday, August 4th, cleaning and sweeping floors and dusting artifacts in Phase I while Furniture Village movers spent the day moving most of the artifacts from Phase II to storage elsewhere. The following day an additional group of seven teens cleaned, swept and dusted the VOA installation and the remaining artifacts in Phase II in preparation for the conference.

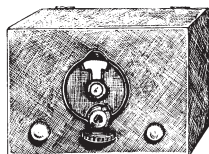
Immediately after the conclusion of the conference, Chrisanntha Construction began building three kiosks in the northwest corner of Phase II dedicated to the display

of telephony and telegraphy in one, teletype in another and a third replicating a Western Union station of the 1800s. They also began the installation of the wall that traces the outlines of the Educational Theater, Phase III.

Steve Bradford began the installation of new lighting to match the fixtures in Phase I and SDC Millwork provided multiple rows of oak shelving to facilitate display of artifacts, occupying the east side and north of the VOA display, directly across the aisle from the three kiosks. Things are moving quite rapidly now with the main and sub contractors at the museum most days. I believe that Curator Bruce Roloson is planning a dedication ceremony when the above work is concluded and the final flooring is laid. Soon I will be contacting the caterer for our November meeting.

AMATEUR RADIO

EDITED BY TIM WALKER, W1GIG, 19 WOODSIDE AVE., WESTPORT, CT 06880,
W1GIG@ATT.NET, PLEASE INCLUDE SASE FOR REPLY.



Ham Events Past and Future

Note: since this issue of the Journal has been very much delayed (see editorial), Tim Walker's introduction to the column is included for historical purposes only, and without the rules for the Kelley and Cundall events, which will have already taken place.

Now we're looking forward to the AM QSO Party (February 20 and 21) and the John Rollins DX Contest (March 9-10 and 12-13). Check www.antiquewireless.org for more information as it becomes available.

—mfe

Greetings to all:

Well, the Convention is over and fall is in the air, so it is time to get out those classic transmitters and see if they still work. But

first, the convention was a success even if a lot of you did not get there. Not too many people showed up, so you missed some very interesting presentations, a close look at one BIG transmitter and a very good flea market that had lots of excellent bargains.

Coming up are two of our favorite events, the Bruce Kelley 1929 QSO Party and the Linc Cundall CW Contest. Both of these are in honor of two of the founders of AWA. The Kelley needs no introduction to our readers. The Cundall contest provides you with an opportunity to use some of your WWII surplus equipment, or you can use your transmitter from the Kelley for extra points as it qualifies for the QRP category.

—Tim

THE ITEM IN QUESTION

Spotlighting Noteworthy Artifacts From the Collection of The AWA Museum

BY WILLIAM HOPKINS, AA2YV • EMAIL: WHOPKIN4@NAZ.EDU

“The Only Girl Inventor in Radio”

No museum could outlive its original founders and supporters without a well-organized, proactive Archive, whose staff are dedicated to the principles of accuracy, completeness, ease of accessibility, openness to the public, service and growth.

The staff of the AWA’s Max Bodmer Library, includes Jim Kreuzer, Librarian and Assistant Curator, together with Caroline MacMillen, Eileen Bisha, Bill Jaker and others who make the archival holdings available to Museum members, historians, students and others. Members can be confident that their continued support pays critical knowledge dividends to society. The “item” for this issue of the *Journal* comes to you from the AWA Archive. And the headlines below, from a 1924 newspaper will introduce it.

Girl Genius Meets Edison!

*NY Woman Takes Place Among
Prominent Wireless Inventors!*

The Only Girl Inventor in Radio!

Our item is actually a collection of documents that highlights the achievements of the first woman known to be an inventor in the field of radio.¹ The packet of documents includes photos, newspaper clippings, driver’s licenses, a company’s stock certificate, a young child’s artwork on company letterhead, blueprints of two inventions and some business cards.

Abigail (“Gail”) Turner Savage (1901-1977) was born in San Antonio, Texas, schooled at Ward Belmont School in Nashville and at 19 married Frank Savage (1894-1933). Frank had been stationed at

Camp Kelly in San Antonio during World War I and was discharged from there. During the war, 25,000 personnel made up some of the first U.S. “aero” groups of the First World War. Records tell us that Frank was attached to the 819th aviation repair squadron, indicating that he had at least some mechanical know how; if he also had radio experience no available document implies this. Though collaboration between Frank and Gail was certainly possible, there is no hint of it in the documents available to us. As far as we can tell it was Gail, with her spunk, who came up with the ideas for her radio inventions.



Gail Savage with her Mello Amplifier-Speaker.

The story of Kelly Field calls to mind several famous people who passed through the base. The (later) General “Tooey” Spaatz, Claire Chennault, Eddie Stinson, his sisters Katherine and Marjorie, Charles Lindbergh and the Doolittles all spent time there.

The radio market began in earnest in the early 1920s. The much-touted radio fairs in New York and Chicago attest to this. Speculation was that the amateur radio market would boom. This was the period of such iconic radios as the Crosley 50 and 51 and the Atwater-Kent “breadboard” sets.² American manufacturers dominated this market.³ For example, of the 224 metric tons Germany sold abroad in 1924, only nine came to the U.S. Even the “better” music stores were beginning to see profit in selling radios right along with the instruments. In 1924 no fewer than seven stores on Wabash Avenue in Chicago (e.g., Wurlitzer, Steger, Kimball, etc.) had jumped into the market.⁴

Our information from the Archives about Gail Savage and her inventions comes from two main source types. First, several newspaper articles reported her attention-getting prizes at the New York World’s Radio Fair and the Chicago Radio Fair. Especially, the well-crafted article in the *Brooklyn Eagle* by Helen Touvim on January 25th, 1925, gives us the valuable backstory to this social sensation.⁵

Second, the collection includes the blueprints of Gail’s two inventions as well as the stock certificate, in Frank Savage’s name, of their newly formed Radio Research Corporation, giving him essentially a 56% share of the business. (The “rest” of the sought-after \$125,000 was most likely never raised.) Frank’s later business cards, his Pennsylvania driver’s license and automobile registrations are also included.

Finally, childhood drawings by four-year-old daughter Elva—with possible em-

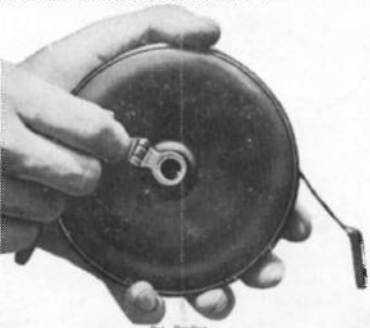
“REDSKIN” PORTABLE AERIAL

THE REDSKIN PORTABLE RIBBON AERIAL makes every radio set portable—including the simple crystal set. It combines the two paramount requisites of radio antennae—UTMOST EFFICIENCY and MAXIMUM PORTABILITY.

is more compact than a higher energy and may be erected or taken down more easily than a

is readily adaptable to any antenna length.

is a combination of spring and brake which is a constant means of holding the reel—so that no more tension will pay and makes a connection to the lead-in—ALL IN ONE OPERATING POSITION; merely by turning the terminal screw, the Redskin can be carried in pocket.



To erect fasten one insulator to the top of your car, or any suitable support, well to any other convenient point, which a support is available as hang up the case. The installation is complete!

For the experimentally inclined tests to determine directional efficiency or the comparative efficiency of various lengths of aerial may be made quickly and easily.

Because of the electrical phenomena known as “skin effect” there is no more efficient aerial than the copper ribbon.

Pat. Pending.

SIMPLICITY Itself!

COPPER RIBBON COILED IN A CASE

The Redskin portable aerial as pictured in a vintage advertisement.

bellishments by her mother—are to be seen on unused RRC letterhead. The cute *flapper* faces and hairdos in these drawings contrast with Gail’s new image of an engaging and attractive “girl genius,” not a “radio bug” (today’s geek), which is what a young man in radio would have been called.

Helen Touvim’s remarkable article in the *Brooklyn Eagle* provides the factual and personal context.⁶ Based on the interview she did at Gail’s home on 327 Eastern Parkway in Brooklyn, Touvim recounts how the first invention, the portable “Redskin” antenna came into existence.

She deftly crafts a story of a young mother determined to vanquish the frustration brought on by a tangled wire that Gail and Frank had tried all day to string up atop their flat-roofed four story walk-up, which is still visible on *Google Earth*. This was apparently against the building super’s policies, so it seems that the need for a stealth antenna played some role here. Landlords were understandably wary of the new technology.

Frank trashes the wire, but Gail retrieves it and within a week has a 100-foot copper wire neatly wound inside a surveyor’s tape

enclosure—producing the *Redskin*, a “portable aerial.” Frank was mildly supportive but otherwise remained uninterested. Advertising work, not mechanical and electrical know how occupied his mind these days. Later, although one reporter seemed to believe that Gail “shares her husband’s fondness for experimenting,” another from an Oyster Bay newspaper noted that Frank’s reputation as a technician had been “dimmed to some extent by the contributions of his wife to the science.”⁷ What are we to believe?

Gail Savage has succeeded in two ways. First, her husband (also?) sees a good thing, and they establish their Corporation. Asserted to be an “outgrowth of the Redskin Radio Company”, it would market the antenna and an amplifier-speaker that was another of Gail’s inventions. (Frank searches for investors, probably unsuccessfully.)

Second, Gail lands a stunning coup when her antenna is judged a winner at the New York Radio World’s Fair held at the old Madison Square Garden on September 22-28, 1924. One reporter wrote that she was “ranked beside some of the leading engineers of the radio world.”⁸

Finally, she tops this off with a win at the Third Annual Radio Fair in Chicago, held a short time later, with her speaker-amplifier set, the *Mello*, which, it seems, she built herself. Of course, she is always introduced as the “wife of Frank Savage, who shares her husband’s fondness for experimenting.” The blueprints in the AWA Archives unfortunately have no accompanying schematic for the amplifier.

Soon, Gail is acquiring articles and advertisements from radio magazines, such as Hugo Gernsback’s *Radio News* and *Practical Electrics*, in which could be found numerous suggestions for further innovation. She would also find parts and radios readily available at the many dealers springing up in and around nearby Manhattan.

Helen Touvim writes that Gail’s apartment was “devoted to radio.” Radio parts were everywhere. “In the front room there are several large sets fitted out with Mrs. Savage’s new loud speakers.” The kitchen

even had boxes of radio parts. Of course, the “Redskin” aerial was strung up in the front room.

The sum of Gail’s inventions seems to be the antenna and speaker/amplifier being sold by their young company. One other attempt at marketing seems to have been a radio coil winding machine, guaranteed to wind accurately and at an even tension. Nothing more is known of this, other than a brochure that was found in the Archives.

Gail’s pyramid-shaped box housing a speaker and an amplifier looks much like the invention of Charles Blieberger, a restorer of Cremona violins and long-time experimenter with loud speaker systems. His work was briefly described in the *Radio News* edition of March 1923.⁹ However, it is unclear if Gail used the ideas of others. It was the “Wild West” of radio development.

Women had just entered the national voting rolls with the passage of the 19th Amendment to the Constitution on August 18, 1920. In a way, Touvim pushes her readership to begin considering women as equals in this world. With rhetorical acumen, she first sidelines any scoffing at the young woman by asserting that “it’s very hard to think of Gail Savage as an inventor.”

This permits her now to suggest that women like Gail could rank with an Isaac Newton, whose falling apple gave *him* a good idea, or to portray Gail as the embodiment of a Thomas Edison and other “men of science, of vast knowledge and experience, who have devoted a lifetime to study.” If Madame Curie somehow can be accepted in a laboratory, why isn’t it natural, she implies, that Gail could work in her kitchen or at a newly rented laboratory space at 61 Ann St. to carry on her experiments?

A word of approval by the inventor of all inventors, Thomas Alva Edison, caps off the article of our feature reporter. Gail becomes truly someone special at her introduction to the man himself at the *Garden* that September. The world-famous inventor and his wife had tried to enter the Fair unseen. But the promoters, espying them, saw a good thing and brought Mrs. Frank Sav-

(continued on page 21)



ERIC WENAAS, P.O. BOX 676028, 14813 RANCHO VALENCIA VISTA,
RANCHO SANTA FE, CA 92067, E-MAIL: ERIC@CHEZWENAAS.COM

Books to be reviewed in this column should be sent directly to Eric Wenaas at the address above. After review, all such books become a permanent part of The AWA Library, which is available to members for browsing and research.

Crack of the Bat, A History of Baseball on the Radio by James R. Walker; foreword by Pat Hughes. Printed 2015 by Nebraska University Press. 344 Pages: 6¼" x 9¼"; 26 photos and 8 tables. Hardcover \$28.95; Kindle \$15.99 (Amazon).

"The crack of the bat, the sound of baseballs thumping into gloves, the infield chatter are like birdsong to the baseball starved." This quote by W. P. Kinsella, who wrote many short stories and three novels about baseball, is an appropriate allusion to the subject of this book. Both the quote and the book are all about the sounds that bring back fond memories of baseball, which Walker says "has always engendered nostalgia, and that baseball on radio is a major source of that affection."

The author takes readers from the 1920s to the present in his detailed examination of the role of baseball in the development of the radio industry and the complex co-evolution of their relationship. The book weaves an interesting story about the interplay between four major forces shaping the two industries—the baseball club owners, the major radio networks, the advertisers, and the Office of Commissioner of Baseball.

Walker points out that the first three were substantial entities whereas the baseball commissioner was but a single individual. However Judge Kennesaw Landis, the first baseball commissioner, appointed in 1920 by team owners, was given wide-ranging powers. The objective was the restoration of baseball's tarnished reputation in the wake of the 1919 Black Socks scandal.

Soon after his appointment, baseball was exempted from the antitrust provisions of the Sherman Act. This gave Landis even

more power, which could not be easily challenged in court. Landis was rarely challenged directly by anyone, much less by members of the other three entities.

Not to be forgotten are the impacts of the individual stations that made up the networks and the many beloved announcers who were the voice of baseball. In fact, stories about the announcers make up a large part of the book—the evolution of announcing techniques and skills, critiques of those skills, the selection process by individual stations and especially for the World Series games, and other colorful, if not historic events.

Just about every announcer and individual radio station is mentioned, as are the influential team owners such as Bill Veeck, Sr., owner of the Chicago Cubs, who helped shape both baseball and radio as they grew in popularity together. There is plenty of nostalgia to go around for anyone who lived in cities hosting the teams or in areas within radio range of stations broadcasting radio games.

While this book is about nostalgia, it is also a serious book, well researched, containing interesting facts and figures. For example, there are eight tables listing the number of radio stations covering each team by year from 1936 to 2001, not to mention the 28 pages of endnotes with many good references to original sources.

The book is divided into three parts: Part I. The Formative Years, 1920-1936; Part II. The Age of Acceptance, 1937-1960; and Part III. The Television Years, 1960-Present. While the book is arranged chronologically, Walker has identified and developed six themes, most of which run

throughout the book. Several of these themes are of particular interest,

One example is “What is a Baseball Broadcast?” I thought I knew what an old-fashioned baseball broadcast was like, but I was surprised to find there were nine different varieties including two different recreation broadcasts where the announcer was not even present at the game. Walker points out that some games, still recounted in baseball lore, were invented from fragmentary telegraphic information.

One of the announcers that tickled my fancy was Gordon McLendon, who is remembered for creating dramatic accounts of the baseball games aired by his radio station in Dallas, Texas. These accounts were considered to be far better than those reported from the ballpark. McLendon recorded noises, stadium sounds and even the national anthem to evoke a unique atmosphere for each location. He even went so far as to hit a stick with a hammer to create the crack of a bat!

There are several other compelling themes, one being an explanation of why some teams were firmly against broadcasting radio games for fear of losing attendance while other teams favored radio broadcasting despite that fear. Another theme was the conflict between radio stations and newspapers as the sports writers lost their ability to compete with radio announcers in the arena of play-by-play coverage. Yet another theme was the commercialization of radio broadcasts, which was first resisted by some owners and favored by others who had products to sell. In the end, commercialization was agreed upon by the majority of owners to make up for the shortfall arising from a drastic reduction in attendance at the ballpark during the depression.

Walker provides a number of vignettes to support the main themes, many of which should be of interest to antique radio enthusiasts. He begins the book in earnest with a vignette about the 1922 World Series in New York City between the Yankees and the Giants. This was the first series to be broadcast live with an on-site radio announcer. Walker points out that in anticipation of the series,

RCA ran an ad in the October 4, 1922 issue of *The New York Tribune* urging fans to “Hear the Crowd Roar! at the World Series Games with the Radiola.”

The *Tribune* was the obvious venue for this ad because Grantland Rice, the game’s announcer, was that newspaper’s famous sports editor. The ad urged the fans to prepare for the event by buying a set from their nearest dealer and asking for the Radiola Score Sheet so that they could mark every move of the game on the included chart of the field. I could not help but retrieve this ad from the *Tribune* and add it to my collection of other Radiola ads, mostly from nationally distributed magazines.

Walker also described several vignettes from the 1923 World Series, including the fact that Major J. Andrew White, editor of RCA’s *Wireless Age* magazine, was the announcer for WJZ. Walker also provided a valuable reference to an article in the November, 1923 issue of *Wireless Age*, on page 29, entitled “Reporting Baseball Series to Millions.” It pictured White broadcasting the game with the aid of a cardboard “score board” having an outline of the baseball diamond he used to follow the plays and identify the players.

This article is remarkable for the pictures and photographs that presented an interesting behind-the-scenes snapshot of what was required to broadcast a ball game. These photos provide an excellent adjunct to the photos in the book, which are primarily portraits of personalities associated with baseball and broadcasting. To be sure, the original references alone in this book are worth the price of admission.

Walker goes on describing the major events that helped to shape both baseball and radio. The Great Depression resulted in a disastrous drop in attendance, causing baseball to look for additional resources from advertisers. The Depression hastened the arrival of commercials in baseball radio broadcasts, making the 1930s the decade when advertising in baseball programs came of age. Walker says that the advertisers became so influential in the 1930s that they pushed major network stations out of

regular season baseball coverage because they demanded station clearance for their regularly sponsored daytime programs

World War II also had a major influence on both radio and baseball, with AM radio remaining profitable, though stagnant. One interesting factoid is that President Roosevelt encouraged Major League baseball games to continue despite the war because they could boost morale. He also encouraged the leagues to consider night baseball so that workers on day shifts would have an opportunity to enjoy the games. As a result, night baseball was instituted and proved to draw more attendance than the day games. Still, it would take some time before night baseball became mainstream.

The author points out that while the Golden Age of radio is generally considered to be the 1930s and 1940s, the explosion in national coverage of baseball on the radio occurred in the 1950s and 1960s despite the appearance of television. Walker relates many fascinating facts and stories about baseball broadcasting on the radio in the TV and Internet eras, but alas, due to lack of space here, the reader will have to consult the book directly for details.

I found *Crack of the Bat* to be easy to read, informative, well-researched and compelling. It gave me a new perspective about the role baseball played in developing and expanding radio coverage in the U.S. It also provided valuable insights into

the role and interplay between and among the major networks, their affiliates and their advertisers. I can definitely recommend this book to anyone interested in antique radio and broadcast radio—even if he or she is not an avid baseball fan.

Author James R. Walker is a professor emeritus and former chair of the Department of Communication at Saint Xavier University. He is the coauthor of *Center Field Shot: A History of Baseball on Television* (2008), *The Broadcast Television Industry* (1998), *Television and the Remote Control: Grazing on a Vast Wasteland* (1996), and *The Remote Control in the New Media Environment* (1993). He has published over 40 scholarly articles and made over 50 conference presentations on television programming, political communication, and media effects. Pat Hughes, author of the Foreword to this volume, has been the radio voice of the Chicago Cubs since 1996; his name appears on a number of pages in the book.

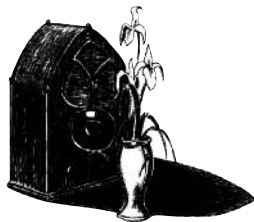
REFERENCE

- ¹ W. P. Kinsella wrote *Shoeless Joe* published in 1982, a book that formed the basis for the 1989 movie *Field of Dreams*. Both the book and the movie included the memorable line spoken by Joe Jackson of Black Sox fame: “If you build it, he will come.”

RECENT RADIO, TV AND ENTERTAINER OBITUARIES

COMPILED BY **CHARLES S. GRIFFEN, W1GYR**

400 SEABURY DR., APT. 4153, BLOOMFIELD, CT 06002-2660



Note: When known, the date of death is indicated in parenthesis.

BILL ARHOS, 80, (4-11-15) television executive and producer. Arhos was regarded as the father of *Austin City Limits*, the longest running music series in American television history. The pilot program aired on October 14, 1974 featuring singer-songwriter Willie Nelson. He served as Executive Producer of the show from 1976 until 1999. Arhos joined KLRU (TV) (then KLRN) in 1961 and helped get the station on the air. He graduated from the Rice Institute (now Rice University) in 1957 before joining KLRU where he advanced from Producer to President/General Manager of the station from 1986 until 1999. Arhos served on the boards of the Public Broadcasting System and Country Music Association. In 2007 Arhos received the Association of Rice Alumni's Distinguished Alumni Award and was inducted into the inaugural Austin City Limits Hall of Fame in 2014.

HARVE BENNETT, 84, (2-25-15) television and film producer and screenwriter. Bennett was best known for producing four of the original six *Star Trek* movies, starting with *Star Trek II: The Wrath of Khan* (1982) and ending with *Star Trek V: The Final Frontier* (1989). He produced several well-received mini-series — *Rich Man, Poor Man* (1976) and *From Here to Eternity* (1979). Bennett received an Emmy Award as the Executive Producer of *A Woman Called Golda* (1982) featuring Ingrid Bergman. He was the Producer or Executive Producer of a number of television shows including *The Invisible Man* (NBC 1975-1976), *The Six Million Dollar Man* (ABC 1974-1978) and *The Bionic Woman* (ABC 1976-1977, NBC 1977-1978). Bennett later served as ABC's Vice President of Programming. He was a panelist on the radio show *The Quiz Kids* (NBC) during the 1940s. Bennett served in the U.S. Army

during the Korean War and then joined CBS in New York City.

JAMES BEST, 88, (4-6-15) character actor. Best became well known playing the giggling and inept Sheriff Rosco P. Coltrane on the television show *The Dukes of Hazzard* (CBS 1979-1985). Born Jewel Franklin Guy, he guest-starred more than 280 times in numerous television series — *Gunsmoke*, *The Andy Griffith Show*, *The People's Choice* and *Richard Diamond, Private Detective*. Best also appeared in films including *The Caine Mutiny* (1954), *Seven Angry Men* (1958), *Three on a Couch* (1966) and *Rolling Thunder* (1977). Best was artist-in-residence and taught drama at the University of Mississippi for two years before joining *The Dukes of Hazzard*. Later he taught at the University of Central Florida. After semi-retiring, he ran a production company and took occasional acting roles. Best served in the U.S. Army Air Force during WWII where he developed an interest in acting in a military theater company.

STEVE BYRNES, 56, (4-21-15) announcer and pit reporter. Byrnes was the longtime NASCAR anchor and host of *Totally NASCAR* beginning in 2001 on Fox Sports Net. He remained with Fox for the remainder of his career covering races and hosting shows on Speed and Fox Sports 1. His NASCAR career started in 1985 when he became host of TNN's *Inside Winston Cup Racing*. Byrnes was also a pit reporter for CBS and TNN before moving to Fox Sports Net. In 2014 he was appointed the play-by-play announcer for Fox Sports 1 in the NASCAR Camping World Truck Series races and co-host of *NASCAR Race Hub*. David Hill, 21st Century Fox Senior Executive Vice President, said, "From the very beginning of NASCAR on Fox, Steve Byrnes was one of the linchpins of the broadcast team." In

January of this year Byrnes was added to the NASCAR Hall of Fame Voting Panel.

DIANNE WHITE CLATTO, 76, (5-4-15) weathercaster. Clatto was credited with being the first full-time black television weathercaster in the nation. She began weather forecasting on KSD (TV) (now KSDK) in St. Louis in 1962. At the time she was also a manager for Avon, a cosmetics company. Clatto remained with the station for 12 years until weathergirls went out of fashion. She also worked a co-anchor and general assignment reporter on the station. After Clatto left KSD she hosted a three-hour talk show on KBDY (FM) and did a four hour shift on KXOK (AM) talk radio. Clatto returned to TV doing a weekly cable program, *Shades of Success*. She also worked as special assistant to Mayor Francis G. Slay of St. Louis. Clatto was inducted into the St. Louis Black Journalist's Hall of Fame and the Missouri Hall of Fame.

MILTON DELUGG, 96, (4-6-15) band leader & composer. DeLugg conducted orchestras or smaller groups on *Abe Burrows' Almanac* (CBS 1950), *Broadway Open House* (NBC 1950-1951), *Doodles Weaver* (NBC 1951), *Seven at Eleven* (NBC 1951), *Judge for Yourself* (NBC 1953-1954), *The Tonight Show Starring Johnny Carson* (NBC 1966-1967), *Your Hit Parade* (CBS 1974), *The Gong Show* (Syndicated 1976-1980) and *The Chuck Barris Rah Rah Show* (NBC 1978). Later he was NBC's Music Director for Macy's Thanksgiving Day Parade. DeLugg co-wrote *Orange Colored Sky*, *Roller Coaster*, *Hoop Dee Do* and *Hooray for Santy Claus*. Earlier, the Milton DeLugg Quartet provided music on *The Abe Burrows Show* (CBS Radio 1947-1949.) While trying to break into show business playing the jazz accordion DeLugg hedged his bets by studying accounting in college. When he was offered a job in the staff orchestra at Paramount studios he quit school. He served in the U.S. Army Air Corps during WWII in a radio production unit.

BEN E. KING, 76, (4-30-15) vocalist and composer. King was the lead singer for the Drifters and as a baritone soloist sang such pop and rhythm and blues classics as *Stand*

By Me, *There Goes My Baby* and *Spanish Harlem*. Born Benjamin Earl Nelson, he joined a doo wop group called The Five Crowns in 1958. That same year the manager of the Drifters fired the original members and replaced them with The Five Crowns. He left the group in 1960, adopted the stage name Ben E. King and began a solo career. In 1963 King had a Top 30 hit with *I (Who Have Nothing)*, which reached the Top 10 on WMCA (AM) in New York City. He earned 12 Top 10 hits and 25 Top 40 hits from 1959 to 1986. King was inducted into the Rock and Roll Hall of Fame as a Drifter and was also nominated as a solo artist. He was active in his charity, the Stand By Me Foundation.

RILEY B. KING, 89, (5-14-15) guitarist. He was better known as B. B. King and called the "King of the Blues." According to AllMusic.com he was "without a doubt the single most important electric guitarist of the last half century." His career spanned 60 years, and by 1995 had played 14,000 shows, including appearances before presidents, the Pope and the Queen of England. He signed with ABC Records in 1962 and in 1969 recorded his biggest hit single: *The Thrill is Gone*. King won his 15th Grammy Award in 2009. He began his career as a disc jockey in Memphis where he was known as "The Beale Street Blues Boy." That nickname was shortened to "B.B." King spent the next several decades recording, touring and collaborating with artists like Eric Clapton, Elton John, Sheryl Crow, Van Morrison and Bonnie Raitt. King was inducted into the Rock and Roll Hall of Fame in 1987 and received the Presidential Medal of Freedom from President George W. Bush in 2006.

TOM KOCH, 89, (3-22-15) comedy writer. Koch was a staff writer for Tennessee Ernie Ford, Dave Garroway, George Gobel, Pat Paulsen, Dinah Shore and Jonathan Winters. He also wrote episodes for television series such as *The Lucy Show*, *All in the Family* and *My Mother the Car*. Koch began writing scripts for the *Bob and Ray* radio show in 1955. Over the next 33 years he wrote almost 3,000 sketches, including those featuring the "Slow Talkers of America," the hapless detectives in

Squad Car 119, and the bumbling correspondent Wally Ballou. Koch wrote the scripts from home and mailed them to Bob and Ray. Bob Elliott had met Koch only three times and Ray Goulding just once. Elliott said, "He certainly contributed a big part of the Bob and Ray repertoire on radio." He never had a contract with Bob and Ray and was paid by the piece. Koch began his career in Chicago turning out 100 pages a week for Dave Garroway's *Monitor* radio program in New York.

DR. BENJAMIN F. LOGAN, 87, (4-24-15) engineer and bluegrass fiddler. Dr. Logan worked as a mathematician and electrical engineer at the Bell Laboratories during the day and as a bluegrass fiddler on nights and weekends. He patented a device that reduced echoes over telephone lines with John Kelly and, with Lawrence Shepp, devised mathematical methods to interpret CT scan data into accurate images. Logan worked at Bell Labs from 1956 until 1993. Off duty, he was frequently known as Tex Logan and often played with Bill Monroe, universally acknowledged as the father of bluegrass. Logan also performed with Mike Seeger, Jerry Garcia, Lilly Brothers and the Northeast Seaboard Band. He also composed music. Logan was honored as a pioneer by the International Bluegrass Music Museum in Owensboro, KY, and received the International Bluegrass Music Association's Distinguished Achievement Award in 2010.

JAYNE MEADOWS, 95, (4-26-15) actress. Meadows will be remembered for her many appearances as panelist on the television quiz show *I've Got a Secret* (CBS 1952-1959). Other TV credits included *The Steve Allen Show* (NBC 1961), *The Art Linkletter Show* (NBC 1963), *The Steve Allen Comedy Hour* (CBS 1967), *Medical Center* (CBS 1969-1972), *It's Not Easy* (ABC 1983) and *High Society* (CBS 1995-1996). Meadows received Emmy Award nominations for appearances in *Meeting of Minds* (1977-1981), *St. Elsewhere* (1987) and *High Society* (1996). She was born Jane Meadows Cotter to missionary parents in Wuchang, China and later attended St. Margaret's School in Waterbury, CT where

she began performing. Some highlights of her film work are *Undercurrent* (1946) starring Katherine Hepburn and Robert Taylor, *Enchantment* (1948) and *David and Bathsheba* (1951). Broadway credits include *Spring Again* (1941), *Kiss Them for Me* (1945) with Richard Widmark and Judy Holliday and *The Gazebo* (1958). Meadows was married to Steve Allen and was the sister of actress Audrey Meadows.

MARTY NAPOLEON, 93, (4-27-15) jazz pianist. Napoleon's "vivacious and percussive style" of piano playing was frequently heard with bandleader and trumpeter Louis Armstrong's All Stars Ensemble. Some of the other bands he performed with included those of Chico Marx, Joe Venuti, Lee Castle, Charlie Barnet and Gene Krupa. In 1955 Napoleon formed a two-piano quartet with his brother Teddy and then led his own group at the Metropole Café in New York City from 1956 until 1958. Next, Napoleon worked with Coleman Hawkins and Charlie Shavers at the Cafe from 1958 until 1959, leading his own trio there from 1959 to 1960. Born Matthew Napoli, he made television appearances on the Timex Company jazz spectaculars and, for 18 weeks in 1958, was on *Art Ford's Jazz Show* on WNTA (TV) in New York City. Napoleon also was seen on shows hosted by Danny Kaye, Dick Cavett and Jackie Gleason. In later years he played at international festivals, led his own trios and quartets at nightclubs and made recordings.

BILL PASTERNAK, WA6ITF, 73, (6-11-15) engineer and producer. Pasternak was a Broadcast Engineer with KTTV (TV) in Los Angeles until his retirement in 2012. He was also a broadcast consultant specializing in the design of video post-production facilities. Pasternak was the co-founder and editor of *Amateur Radio Newslite*™ and wrote articles for many journals, including *73*, *Amateur Radio*, *QCWA Journal*, *QST* and *Worldradio*. He served on the Board of Directors of the Quarter Century Wireless Association (QCWA) from 2006 until 2010. Pasternak was the only person to receive both the Dayton Hamvention Special Achievement (1981) and Radio Amateur of

the Year (1989) awards. He was also a member of the Radio Club of America. He earned his first amateur radio license, WN2HVK, in 1959.

DONALD R. QUAYLE, 84, (4-16-15) executive. Quayle helped establish National Public Radio (NPR) in 1970 and served as its first President. His goal was to improve the quality of television but he lacked the political connections and publicity skills to achieve it. He was Director of the Educational Radio Network in the 1960s and Executive Director of the Eastern Educational Network in Boston. Quayle joined the Corporation for Public Broadcasting soon after it was formed in 1967. In 1971 NPR's *All Things Considered*, a drive-time newscast, began broadcasting. The program won a Peabody Award the next year. Quayle left NBR in 1973. He became a Senior Vice President of the Corporation for Public Broadcasting and then Vice President for Administration at WETA (FM & TV) serving the Washington, DC area.

DANNY SCHECHTER, 72, (3-19-15) journalist and documentarian. During Schechter's 45-year career he became one of the most prolific and wide-ranging media voices on the political left. His thoughts moved from radio to television news, films and blogging. Schechter won two Emmy Awards for his work with ABC's *20/20*, produced independent documentaries and wrote books and journal articles. During the 1970s he was heard on WBCN (FM) then became an on-air reporter for WGBH (TV) before producing *Five All Night, Live All Night* for WCVB (TV). Schechter was employed as a news and investigator reporter for CNN and ABC in their early days. He was a founder and Vice President/Executive Producer for Globalvision, Inc., a media company founded in 1987. The firm received a George Polk Award in 1990 for producing *South Africa Now*, a weekly show seen nationally on public television stations. Schechter got his start in radio at WBCN when the announcer said he couldn't read his copy followed by: "You read it."

RALPH SHARON, 91, (3-31-15) jazz pi-

anist. British born Sharon spent four decades as Tony Bennett's accompanist and also discovered the vocalist's signature song, *I Left My Heart in San Francisco*. He helped guide the singer's career during the height of his popularity in the 1960s and during his comeback in the 1990s. Sharon was the Musical Director for all of the ten Grammy Awards Bennett won between 1962 and 2002. In his 1998 autobiography Bennett wrote, "Ralph is my idea of the perfect accompanist." Sharon was the pianist and principal arranger for *Perfectly Frank* (1962), which earned a Grammy Award, and *Steppin' Out* (1993), which won a Grammy for Best Traditional Pop Vocal. Sharon didn't exhibit any interest in music until he came to this country in 1953 and discovered American jazz. He retired as Bennett's Musical Director in 2002 and moved to Colorado. There he performed in jazz clubs and hotel lounges until not long before his death.

BERT SHIPP, 85, (4-20-15) broadcast journalist. Shipp was News Assignments Editor and Photographer at WFAA (TV) in Fort Worth at the time of his retirement in 1999. He joined the station in 1961 and worked as a photographer-reporter, helping to define television news in North Texas. Previously Shipp worked for what was then WBAP (TV), as well as reporting for *The Dallas Times Herald* and *The Abilene Reporter-News*. He was a member of the Press Club of Dallas and served as its President. Shipp received the Press Club of Dallas Legends Award and in 2013 the Lone Star Chapter of the National Academy of Television Arts and Sciences inducted him into its Silver Circle for Lifetime Achievement. Shipp's experiences are chronicled in his book, *Details at Ten: Behind the Headlines of Texas Television History* (2011).

JULIE WILSON, 90, (4-5-15) vocalist and actress. Wilson was a major presence in the cabaret world and was called "The Queen of Cabaret." Some of her singing engagements included The Oak Room in the Algonquin Hotel, The Café Carlyle, The Persian Room at the Plaza Hotel, The Latin Quarter and other posh nightspots. She specialized in the songs written by legends, in-

cluding Stephen Sondheim, the Gershwins, Jerome Kern, Rogers and Hart and Cole Porter. Some of Wilson's Broadway appearances included *Kiss Me Kate* (1949), *Kismet* (1953), *The Girl in the Freudian Slip* (1967), *Jimmy*, (1969) and *Park* (1970). Her most famous stage role was in the 1988 musical *Legs Diamond*. A sampling of her solo recordings includes *Julie Wilson Sings the Gershwin Songbook* and *Julie Wilson at the St. Regis*. Wilson quit college in order to join a road tour of the musical revue *Earl Carroll's Vanities* during its run in Omaha. She left the show when it got to New York City in 1943.

Information for this column was obtained from *The Boston Globe*, *The Complete Directory of Prime Time Network and Cable TV Shows 1946-Present* (9th edition), *The Hartford Courant*, *The Magazine*

of Rice University, *On the Air: The Encyclopedia of Old-Time Radio*, *QST*, *The Washington Post*,
www.allmusic.com,
www.beneking.info,
www.biography.com,
www.foxsports.com,
www.huntingtonpost.com,
www.imdb.com,
www.latimes.com,
www.legacy.com,
www.qcwa.org,
www.playbill.com,
www.star-telegram.com,
www.stlmag.com,
www.variety.com,
www.wfaa.com
and www.wikipedia.com.

The writer wishes to express his appreciation to Ted Hannah, K3CL and Dr. A. David Wunsch for additional source material.

THE ITEM IN QUESTION, continued from page 13

age along to meet the unexpected guest, whereupon she demonstrated her aerial and promptly handed him one as a gift. He knew, Edison said, "just how a fellow inventor felt towards his first invention." Mrs. Edison's equal enthusiasm about all this is also quite understandable.

More can be known about Gail, Frank and daughter Elva from the archival records, but the information belongs more to their personal lives than to Gail's achievements. They now return to Texas via Philadelphia and pursue other goals.

REFERENCES

1 See: Donna L. Halper, *A Social History of Women in American Broadcasting*, Armonk NY: M.E. Sharpe, (c2001) 2014, p. 31
2 http://www.radiomuseum.org/dsp_hersteller_detail.cfm?company_id=716.

3 *Presto – The American Music Trade Weekly*, Chicago, IL, Dec. 6, 1924, p. 24, <http://presto.arcade-museum.com/PRESTO-1924-2002/26/>.
4 Presto, loc. cit., p. 25.
5 Gail Savage was ultimately written up in a radio magazine a year after her antenna invention: "The Fair Sex Inventor," in *Radio News*, May 1925, pp. 2089, 2116.
6 AWA Archives; *The Brooklyn Eagle*, Sunday, Jan. 25, 1925, p. 8, zit: <http://bklyn.newspapers.com/news-page/59876951/>.
7 AWA Archives: Special Dispatch of the New York Telegram, on the third annual Chicago Radio Fair; Oyster Bay newspaper clipping, no date.
8 AWA Archives: newspaper article, no date.
9 *Radio News*, March 1923, p. 1612, <http://www.americanradiohistory.com/Archive-Radio-News/20s/Radio-News-1923-03-R.pdf>.

THE VACUUM TUBE

EDITED BY **LUDWELL A. SIBLEY**, 102 MCDONOUGH RD., GOLD HILL, OR 97525-9626

PLEASE INCLUDE SASE FOR REPLY. COPYRIGHT © 2016 LUDWELL A. SIBLEY.



Vapor Cooling For Power Tubes — Dissolving Tube Base Cement

Copyright © 2015 Ludwell A. Sibley

One often thinks of steam as a medium for heating things, but it has a seemingly contrary use that is unique to electronics: the vapor-cooling of big transmitting tubes.

The disposition of unwanted heat from vacuum tubes by radiation and convection was the obvious mode in use from the time of World War I. It was ultimately practical in glass internal-anode tubes at levels of plate dissipation up to a kilowatt or two. Beginning ca. 1922, higher power tubes relied on the use of an external copper anode sealed to a glass bulb and immersed in cir-

culating distilled water. Progress in tube design in the 1930s brought in the use of forced air, typically by brazing a finned “radiator” to what had started out as a water-cooled type. However, an innovation appeared on the scene in the 1950s: use of vapor cooling.

The physical principle involved here is straightforward. With water cooling, raising the temperature of one gram of water by one degree Centigrade takes away one calorie of heat. However, letting that same gram boil into steam extracts 540 calories. This allows use of a smaller anode cooler on the tube, and eliminates a good deal of piping and tankage. The steam is sent off to a condenser, where a relatively small air blower takes away the heat. The condensed steam then trickles back to the boiler that houses the tube, without the need for a pump. In the boiler design, the steam may be sent out through the top or the bottom, allowing separation of the plate cooling system from the input circuitry.

The anode is usually in a “pineapple” or “pine-cone” form, with studs machined or cast into it. The design encourages turbulence in the boiling action, preventing the formation of a clinging layer of vapor that would have an insulating effect.

This scheme originated at the *Compagnie Française Thomson-Houston* (today’s Thomson-CSF), with first application in a transmitter occurring in 1950. The concept spread through the high-power tube industries in Europe and Japan.

The first American vapor-cooled tubes appeared in the early 1960s. It gave stiff competition to conventional water-cooling, but was not a universal replacement. The



At left, Eimac 4CV100,000C, of the type used in the Collins VOA transmitters and Gates VP-100 AM system. It dwarfs an Eimac 150T, the company’s first product from 1934. The silver-plated anode of the 4CV100,000C (at bottom) is discolored from long use.

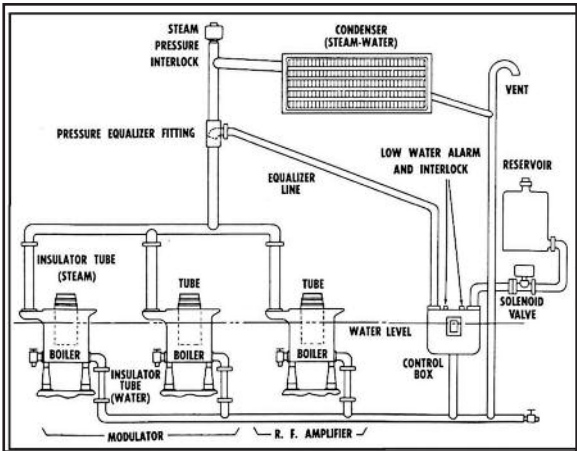
majority of the relevant tubes had ceramic bodies. Most were set into an external boiler, but a few had the boiler built-in. Looking toward the expanding markets for short-wave broadcast transmitters and large industrial RF heaters, the majority were rated at full power up to 30 MHz. A few were intended for audio-frequency use in shaker-table drivers, sonars, and similar uses, and a few more were rated up to 1000 MHz.

The table lists the earlier U.S. tubes numbered under the Electronic Industries Association four-digit system. In addition, Amperex catalogued six glass tubes originated by Siemens in Germany in power-dissipation ratings from 45 kW up to 180 kW. English Electric Valve (today's "e2V") offered 13 types with output ratings (in Class C oscillator use) from 20 kW to

220 kW. Thomson-CSF had an extensive line of about 47 triodes and tetrodes. With advances in anode design giving increasing levels of heat density (numbered in dissipation per square centimeter of anode surface), Thomson marketed them under the

names "Vaportron," "Supervaportron," and "Hypertron." Varian-Eimac developed 20 or so tubes, a couple of relatively small size (like the 3CV1500A7 at 1.5 kW) but mostly giants up to the 4CM2500KG (2.5 megawatts). By contrast, RCA seems not to have entered the vapor-cooled market.

These tubes served mightily in broadcasting. Machlett Laboratories claimed that its 7482 provided the first significant use of vapor cooling in the U.S., via three General Electric 4BT250A1 SW transmitters installed in 1962 at the massive Voice of America station in Greenville, NC. Each had a 7482 driving two more, with an additional



Cooling system for modulator and final amp in Gates VP-50 transmitter.

Type	Maker	Registration Date	Dissipation kW
Triodes			
7479	Machlett	10-29-62	50
7480 @	Machlett	2-25-63	80
7482 *	Machlett	2-2-62	200
7532	ITT	6-26-61	10
7540VC	Westinghouse	4-25-60	75
7832	Westinghouse	11-25-63	75
8133	Westinghouse	Not reg.	Unk.
8333	Westinghouse	2-18-63	30
8388	ITT	5-25-64	100
Tetrodes			
8351 #	Eimac	8-26-63	100
8545	ML	Not reg.	150
@ Eimac 3CV80,000H3			
* Eimac 3CV200,000D			
# Eimac 4CV100,000C			

pair as modulators [1]. Three more 4BT250A1s were added later.

The Eimac 4CV100,000C powered the Collins 821A1 frequency-agile transmitter, three units being installed at each of the Delano (CA) and Bethany (OH) sites of the VOA [2]. The same tube gave an output of 100 kW in the Gates Radio Co. (later Harris Broadcast, now GatesAir) VP-100 broadcast-band transmitter: one tube as the final amp, modulated by another.

Eimac's 3CV80,000H3 formed the output stage in the Gates VP-50 AM transmitter, modulated by a pair of 3CV30,000H3s.

The Eimac 4CV50,000E was the output stage in the Gates SW-100 Autotune international transmitter, with another serving as a pulse-width (switch) modulator.

A pair of Machlett 8545s powered the Continental Electronics 319 250-kW medium-frequency unit, a pair of which combined to give 500 kW for the Eastern Nigeria Broadcasting Corporation [3].

Eimac came up with a couple of tubes for use in amateur linear amplifiers. The 4CV1500B, a vapor version of the air-cooled 4CX1000A, was featured in a *QST* construction article [4]. It was praised as being silent in operation, avoiding the annoyance of blower noise in the room interfering with the reception of rare DX. The "Alpha 70V" commercial linear employed a 3CV1000A7 triode.

Eimac extended the idea of vapor cooling into "multiphase" operation, with a line of five tubes rated at 100, 300, 400, and 500 kW, culminating in the huge 4CM2500KG. With this hybrid plan (water-in/water-out), water is pumped into channels in the anode, where it flashes into steam bubbles. The flowing water captures the steam, which then condenses into liquid before exiting the anode. The water may enter at a temperature below 50 °C and leave at 90 °C.

Dissolving Tube Base Cement

Occasionally one must take the base off a tube—usually to fix a broken pin, or for

other reasons like converting a 5Y3GT into a 5Y4GT by reassigning the plate leads. The problem is how to dissolve the cement that holds the base to the bulb.

For the record, the traditional cement on tubes and light bulbs is composed of marble dust in a phenolic binder ("Durite No. 275"), plus shellac and rosin. The ingredients were wetted with alcohol, then heated to 150 °C or so to cure the mix.

There has not been adequate "scoop" in antique-electronics media on getting this cement to let go. Acetone has been recommended but, on trial, it simply turned brown from dissolving some component from the cement. The cement was weakened to some degree, but the effect was insufficient.

However, methylene chloride, as used in paint stripper, does attack the cement, turning it into a brown soup. The version of stripper sold in liquid form gets down into the space between base and bulb and goes to work. (The "paste" version is too viscous to flow properly.) The tube needs to stand, with the base covered, for two or three days to get proper effect. After that, laying the tube on its side lets the cement flow out.

The stripper contains other solvents: toluene, methanol, and acetone. It's flammable, so handle with care!

REFERENCES

1. "Vapor Cooling: Its First Major American Installation in the New 250 kW Voice of America Transmitter," Machlett *Cathode Press*, Vol. 19, No. 1, 1962, pp. 26-33.
2. J. O'Neal, "The United States Enters International Broadcasting: A Tale of Two Unusual Radio Stations," *AWA Review*, Vol. 21 (2008), pp. 263-264.
3. C. T. Johnson et al., "World's Highest Power Tetrodes — ML-8545 and ML-8546," *Cathode Press*, Vol. 22 No. 2, 1965, pp. 38-45.
4. J. Quinn, "The Stanley Steamer," *QST*, May 1966, pp. 18-22.

AWA CONFERENCE AUCTION REPORT

Sale prices for selected items from the AWA 2015 Convention auction records. Condition descriptions, if given, generally refer to physical rather than working condition. Every attempt has been made to ensure accuracy in reporting these results, but the AWA cannot assume responsibility for any errors that may occur.

ADVERTISING	
GE PORCELAIN ON METAL, EXCELLENT	125
RCA VICTOR INSULATED CUPS, GOOD	.5
RCA AUTHORIZED DEALER SIGN, EXCELLENT	.10
AMPLIFIERS	
WESTERN ELECTRIC 7-A, GOOD	.800
MAGNAVOX AC-2, GOOD	.450
ALTEC LANSING 1594 100W AMP, GOOD	.25
BOOKS AND MAGAZINES	
HUDSON, 1954 CATALOG, GOOD	.5
RCA RED BOOKS VOL 1 & 2	.18
WESTINGHOUSE PORTABLE WATTMETER MANUALS, EXCLNT	.3
BAIRD (\$?) WAVES AND TELEVISION, GOOD	.12
CRYSTAL SET	
UNKNOWN, EXCELLENT	.600
MILITARY	
WESTERN ELECTRIC SCR 68, EXCELLENT	1,000
WESTERN ELECTRIC SCR 67, EXCELLENT	.125
WESTERN ELECTRIC 2A, EXCELLENT	.250
OTHER	
"RADIO" GAME, GOOD	.5
E. I. CO. VARIABLE RESISTOR, GOOD	.25
MURDOCK VARIABLE CAPACITOR, GOOD	.10
UNKNOWN MEDICAL SPARK MACHINE	.60
WILLIAMS, T WENTIETH CENTURY BATTERY, EXCELLENT	.35
PILLING, QUACK MEDICAL DEVICE, GOOD	.45
UNKNOWN SPARK COIL, GOOD	.600
HEATHKIT RA-3, GOOD,	.55
HOMEBREW NAVY TYPE LOOSE COUPLER	.25
YOKO GOWA (JAPAN) PORTABLE WHEATSTONE BRIDGE, EXCLNT	.10
NORCAL QRP 20, 30, 40 METER SETS, GOOD	.130
RECEIVERS	
PHILCO 41-280 CONSOLE, FAIR	.5
RCA 98T7 TOMBSTONE, GOOD	.10
ATWATER KENT 145 RECEIVER, EXCELLENT	.300
FULTONE 3 TUBE RECEIVER, EXCELLENT	.45
SILVER MARSHALL 112 KC LONG WAVE AMP, GOOD	.70
OPERADIO (1925), EXCELLENT	.173
DEFOREST INTERPANEL MR-6, EXCELLENT	.1600
AIR WAY TYPE F, EXCELLENT	.400
ATWATER KENT MODOL 20 LARGE	.110
REBE CR-9, EXCELLENT	.300
GREBE CR-18, GOOD	.800
GREBE CR-9, GOOD	.300
ZENITH 4R, EXCELLENT	.800
WESTINGHOUSE RC, GOOD	.250
CROSLEY X, GOOD	.200
FEDERAL US COASTGUARD R-100, GOOD	.75
PHILCO O 9-506 WEDGE, GOOD	.55
EMERSON 57, FAIR	.23
FEDERAL MODEL 59, FAIR	.375
ZENITH R-82 PORTABLE, FAIR	.2
GRUNDIG 2220	.20
HALLICRAFTERS S-38C	.35
KOLSTER 6D RECEIVER, GOOD	.10
PIONEER SM-Q300, GOOD	.75
MARRANTZ 2226 STEREO RECEIVER, GOOD	.65
HALLICRAFTERS S-37, GOOD	.40
PHILCO 42-345, GOOD	.10
WARD'S AIRLIN, EXCELLENT	.75
SPEAKERS	
RCA 103, EXCELLENT	.75
TELEGRAPH	
BUNNELL KEYS, FAIR	.25
TEST EQUIPMENT	
TEKTRONIX 454A OSCILLOSCOPE, FAIR	.5
SIMPSON 390-2 VOLT/AMP/WATT METER, EXCELLENT	.70
PHILLIPS PH-PM 3211 OSCILLOSCOPE, FAIR	.35
EIKO 666 TUBE TESTER	.15
GENERAL RADIO 724-B PRECISION WAVEMETER, EXCELLENT	.25
TRANSMITTERS	
HEATHKIT "TWOER"	.20
CLEGG 6 METER 99-ER	.15
TUBES	
RCA 1629 UNKNOWN	.70
ATWATER KENT 607 RECETIFIER, UNKNOWN	.25
FARNSWORTH 6032 IMAGE CONVERTER, GOOD	.8
UNKNOWN WD11(3), GOOD	.55
ARCTURUS WUNDERLICH, GOOD	.23
RADIOTRON UV 849, UNKNOWN	.10
RCA 80, UNKNOWN	.25
ARCTURUS 24, 124, 127 BLUE TUBES, EXCELLENT	.15
GERMAN UE 301, GOOD	.30
WESTINGHOUSE 2A3, UNKNOWN	.25
WESTINGHOUSE 2A3, UNKNOWN	.60
CUNNINGHAM CX310, UNKNOWN	.100
TV	
SONY TRINITRON, FAIR, UNKNOWN	.15

SEMINAR 2015 SNAPSHOTS



Alan Carter (left) examines an item at the Key and Telegraph seminar. Bill Jaker is on opposite side of table.



Joe Knight shows off a treasure at Felicia Kreuzer's Pre-1912 Seminar.



Mike Rink (right) about to present his "History of a Large Repeater."



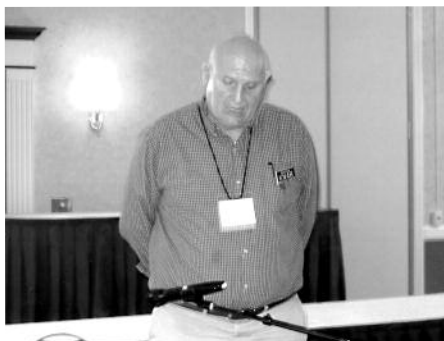
Tim Walker moderates the Amateur Radio activity report.



Mike Adams presenting "Radio in 1922; What the Boys and Girls Knew."



Lynn Bisha introducing Eric Wenaas, who gave a presentation on "Oliver Lodge's Fanciful History of the Coherer."



Brian Harrison presents "The Story and Great Mystery of Amelia Earhart."



Anders Widell of Lund, Sweden Speaks on "Horace Hurm, a Multi-Talented French Radio Pioneer 1880-1958."



Australian Dan Bedford's talk "From Galena to Zero Bias FETS," was a brief history of the radio receiver.



Paul Jason, K2FX, speaking on "Contemporary Radio Update."

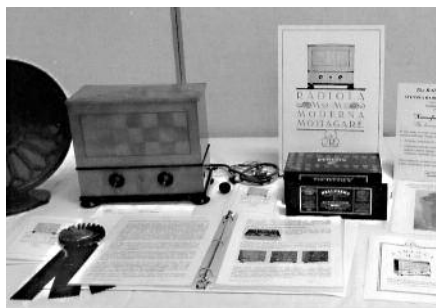


Bart Lee preparing to give his presentation. At right, Tim Walker.

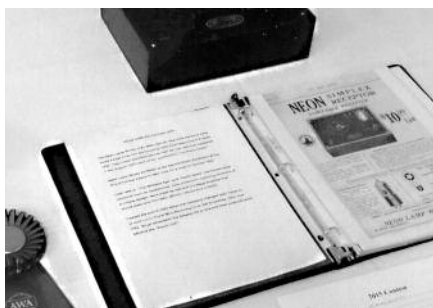


Tom Perera moderates the Key and Telegraph seminar.

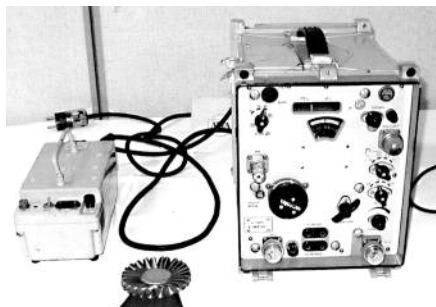
SELECTED BLUE RIBBON WINNERS



Top honors in "International Radio—Pre-1945" were awarded to Robert Lozier for his SRA Radiola Model 155.



Merrill Bancroft's Neon Simplex earned him a First in "Tuned R. F. Receivers."



First Prize in "Military Radio—Misc" went to Roy Wildermuth for his Russian radio.



Steve Wallace won First Prize in "1920s Regenerative and Reflexed Receivers" with his Signal Audion Pane and Coupler.



This Radiola 2 with reproduction Eveready batteries won Robert Lozier a First in "New or Rebuilt."



Geoff Bourne received a Blue Ribbon in "Cone Speakers" for his Zenith Portable Speaker.

As always, this year's contest room contained more fascinating entries than we could possibly do justice to on these pages. However, here is a group of Blue Ribbon winners that caught the photographer's eye as he toured the exhibits.

Photos by Richard Ransley.



These Stromberg Carlson short-wave converters earned top honors for Robert Lozier in the "Open" category.



The Blue Ribbon in "Military Radio—Post World War II" went to Geoff Bourne for his Chinese communication receiver, Model 7512.



First in "Military Radio—Vietnam Era" went to Roy Wildermuth for his BC944 and R342.



The First in "International Radio—Post 1945" went to Julia and David Bart for the pen used to sign the bill funding Radio Free Europe.



Roy Wildermuth received the First in "Vacuum Tube Transmitters and Receivers" for his ITT Mackay Marine Model 3010-C receiver.



Gary Alley won the Blue Ribbon in "1920s Superhets" for his Receptrad Model 5-HE-1.

AWA CONFERENCE AWARDS REPORT

The AWA Recognition Awards

These awards are traditionally presented during the annual banquet. Nominations for the first six awards listed below are solicited from the AWA membership at large and each winner is selected by a special committee charged with administering that particular honor.

The AWA Houck Award for Preservation recognizes the acquisition, preservation and documentation of an outstanding collection of radio artifacts. Awarded this year to the California Historical Radio Society for their work in preserving the history of communications.

The AWA Houck Award for Documentation goes to an AWA member who has written original articles on radio develop-

ment or history in the *AWA Journal*, *AWA Review*, or other publication. (This can include a book on a related subject.) Not awarded this year.

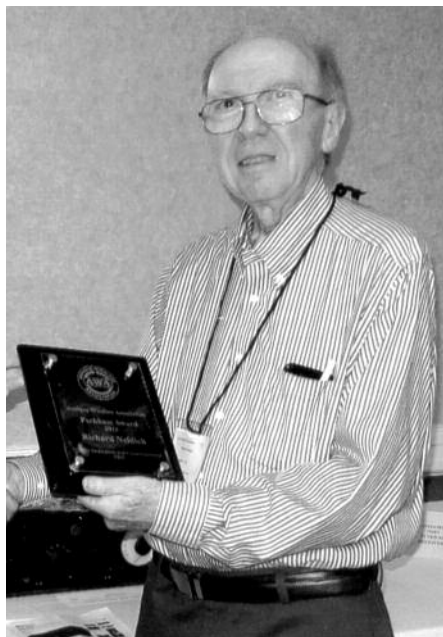
The Bruce Kelley-OTB Award is given to the member who publishes in *The AWA Journal* an article judged to be the most outstanding, original, historical presentation of the award year. For this year, articles in the Summer and Autumn 2014 (55-3 and 55-4) and the Winter and Summer 2015 (56-1 and 56-2) issues were considered. Presented to P. A. Kinzie for his three-part article "Wireless Communication by Earth Conduction in the Early 1900s" appeared in the three issues under consideration.

The J. Albert Moore Award comes to us through the Antique Radio Club of America, which was merged into AWA several years ago. The award honors Mr. Moore's contributions to ARCA. As given by the AWA, it recognizes *The AWA Journal* article, or series of articles, deemed to be the most outstanding of those dealing with radio hardware (radio sets, radio systems or components) printed during the award year. The issues considered are the same as those considered for the Bruce Kelley-OTB Award. Presented to Barry Williams for his article "Radio Favorites Through the Years" that appeared in the Summer, 2014 issue.

The Taylor Award, in memory of John Taylor, RCA TV Developer, is for preserving television history. It was awarded to James O'Neal.

The Tyne Tube Award is presented, in remembrance of Gerald F.J. Tyne, for contributions to preserving or documenting the history of tube technology. Presented to Eric Wenaas for his three-part series "The Vacuum Tube Tangle."

The AWA Museum Award was presented to Eileen Bisha for dedicated service to the Museum. The AWA Deputy Direc-



Richard Neidich's Peckham Award recognized his dedication and contributions to the AWA.



Dave Bart received this year's Max Bodmer Award.



Eileen Bisha with her AWA Museum Award.

tor's Award was presented to William Jaker for dedication and contributions to the preservation of recorded media.

The AWA Electronic Communications Museum Curator's Award went to Mike Kalish for his many years of dedicated service to AWA.

The AWA Directors Award for 2015 was presented to Ed Gable, Museum Curator emeritus, for his many years of service to AWA.

The Max Bodmer Award is for the creation of works that support future scholarship in the field of electronic communication history. Dr. Bodmer, a long time employee of Bell Laboratories, developed the Travelling Wave Tube used in the Telstar Satellite, the world's first television-capable communication satellite. He has endowed the Dr. Max Bodmer Library and Research Center at the Antique Wireless Association's Museum Complex. This year, the Bodmer Award went to David Bart for dedication to the compilation and preservation of resources for AWA and the Radio Club of America.

The AWA Peckham Award was instituted to memorialize the passing of Lauren Peckham, AWA's third president, and his many years of service to our organization. This year, the award was presented to Richard Neidich for dedication and contributions to AWA.

Winners of the AWA amateur radio events are as follows: 1929 Bruce Kelley Memorial QSO Contest: Harold Borchers, KB4ROB; Linc Cundall Memorial OT Contest, John Bogarth, N2BE and Jim Meyer, WT2W; AM QSO Party, Harold Scharnberg, N2FMS; Rollins DX Contest, Janis Carson.



Karen and Eric Wenaas with Eric's Tyne Tube Award.

2015 Old Equipment Contest Winners

Contest Themes: The Voice of America Broadcasts and The Receivers That Listened

CATEGORY 1: VOICE OF AMERICA

- 1st Gary Alley
*VOA Tape Recording of
Truman's Farewell Address*

CATEGORY 2: RECEIVERS FROM BEHIND THE LINES

- 1st Robert Lozier
*VEB Rochlite Juwell 2 1961
E German Radio*

CATEGORY 3: THE HOME FRONT

- 1st Frank Feczko
Hallicrafters S-72R
2nd David and Julia Bart
Zenith WW II War Production Posters

CATEGORY 4: PASSIVE RECEIVERS

- 1st John Terry
Mignon RLC-6
2nd Gary Alley
Crystal-Dyne Receivers
2nd Merrill Bancroft
B+C Crystal Set

CATEGORY 5: 1920S SUPERHET

- 1st Gary Alley
Receptrad Model 5-H8-1 Receiver

CATEGORY 6: 1920S TRF RECEIVERS

- 1st Merrill Bancroft
Neon Simplex
2nd Lowell Ling
DeForest MR-6

CATEGORY 7: 1920S REGEN AND REFLEX RECEIVERS

- 1st Steve Wallace
Signal Audion Pane and Coupler
2nd Merrill Bancroft
Telmaco BR-1
3rd Gary Alley
RADYNE Model H

CATEGORY 8: CATHEDRALS AND TOMBSTONES

- 1st Chris Bacon
Stewart Warner Bookshelf Radio

CATEGORY 9: MILITARY RADIO

- A. Pre-WWII
1st Tom Perera
BC-148
2nd Geoffrey Bourne
SE-3546a Boston Navy Yard Key
B. WWII (1941-1945)
1st Geoffrey Bourne
*Japanese Naval Aircraft Radio
Direction Finder*
2nd Roy Wildermuth
*Nora Morale Radio and Zenith
R-520/URR*
C. Post-WWII
1st Geoffrey Bourne
*Chinese Communication
Receiver Model 7512*
D. Vietnam Era
1st Roy Wildermuth
BC-644 and R-342
E. Misc.
1st Roy Wildermuth
Russian Radio

CATEGORY 10: PORTABLE RADIOS

- 1st David Kaiser
Federal Model 102
2nd Geoffrey Bourne
Zenith Royal 7000

CATEGORY 11. SPEAKERS

- A. Horn
No Entries
B. Cone
1st Geoffrey Bourne
Zenith Portable Speaker

CATEGORY 12: TEST EQUIPMENT

- 1st Geoffrey Bourne
*James Millen Scope Model 90915 S#1
and MIT RADLAB Scope*
2nd Merrill Bancroft
*James Millen Grid Dip Meter Model
90652 S# 2000*
3rd Tim Marten
Hickok Model 870 Transistor Tester
3rd Dennis "Doc" Murphy
Bud WM-78 Wave Meter

CATEGORY 13: TUBES

- 1st Floyd Jury
RCA Selectron Display
1st Geoffrey Bourne
European Tube Display
2nd Leonard Hunter
Japanese WWII 9cm Magnetron

CATEGORY 14: TELEVISION

- A. Mechanical
1st Geoffrey Bourne
*Assorted Scanning Disk Television
Pictures and Magazines*
B. Electronic
1st David Kaiser
Zenith Royal 500 Display
1st Roy Wildemuth
Motorola Model VT-73 1948

CATEGORY 15: INTERNATIONAL RADIO

- A. Pre-1945
1st Robert Lozier
SRA Radiola Model M55
B. Post-1945
1st David and Julia Bart
*President Nixon Display Funding
Radio Free Europe*

CATEGORY 16: NOVELTY RADIO

- A. Tube
No Entries
B. Transistor
1st Geoffrey Bourne
Space Related Crystal Radios

CATEGORY 17: SPARK TRANSMITTERS AND RECEIVERS

- 1st Merrill Bancroft
Early Amrad Spark Artifacts

CATEGORY 18: VACUUM TUBE TRANSMITTERS AND RECEIVERS

- A: Home Brew
No Entries
B: Commercial
1st Roy Wildermuth
ITT McKay Model 3010-c Receiver
2nd Brad Allen
Kenwood TS-940

CATEGORY 19: RESTORATION OF APPEARANCE

- No Entries

CATEGORY 20: RESTORATION OF OPERATION

- 1st Joe Long
*Command Receiver Capacitor
Rebuilding*
2nd Jean Marcotte
Westinghouse Model RC

CATEGORY 21: NEW OR REBUILT

- 1st Robert Lozier
*Radiola II with Reproduction
Batteries*

CATEGORY 22: OPEN

- 1st Robert Lozier
*Stromberg Carlson Shortwave
Converters*
1st J Chris Hauser
Postal Telegraph Display
1st Bengt Svensson
Wireless Cigarette Card Display
2nd Bill Holley
Miniature Key Display
2nd David and Julia Bart
Carl Sandburg Telegram Display
2nd John Terrey
*Evolution of a Janet Hardy Radio
Book Dust Jacket*
3rd Merrill Bancroft
Atwater Kent Auto Radio Sign

RALPH O. WILLIAMS DISPLAY AWARD

Floyd Jury
RCA Selectron Tube Display

BEST OF SHOW

Robert Lozier
SRA Radiola Model M55 Swedish Radio Display

PEOPLE'S CHOICE AWARD

Floyd Jury
RCA Selectron Tube Display

ELLE CRAFTSMAN AWARD

Not Given

MATLACK TRANSMITTER AWARD

Not Given

JUDGES

Robert Lozier Eric Wenass
Joe DiMaggio Geoffrey Bourne
Chris Bacon

ANNUAL CONVENTION CANDIDS



The Rochester DX Association station was operated by Rich, W2FBS (left) and Vic, K1PY.



The registration desk was smoothly handled by Dan and Sue Watersstraat. Looking on in background: Jane Wooters.



As usual, many members took advantage of the Book Fair to fill gaps in their libraries. Richard Neidich photo.



At the Awards Banquet, final event of the Convention, member accomplishments of the past year were recognized and plans were made to do it all over again next year. Richard Neidich photo.



At the Special Guest Luncheon, Sarah Ford Terrey spoke on "How Georgia O'Keefe Changed My Life."



Among the rarities awaiting lucky flea-market buyers were a "Martian" crystal set and a "Snow White and the Seven Dwarfs" theme radio.



As always, Jane and Buford Chidester's booth was the place to visit to see impeccably restored cone speakers.



Among the many members taking advantage of the Convention to exchange ideas were Robert Millard (left) and Alan Carter.



Though not fully completed, the Voice of America Station exhibit attracted lots of attention and interest. Deputy Director Bob Hobday is lecturing. Richard Neidich photo.



Some of the large modules that make up the Voice of America transmitter. Richard Neidich photo.



Laid out on long tables, the lots to be auctioned off await inspection by prospective buyers. Richard Neidich photo.



Once under the auctioneer's hammer, the auction lots quickly find new homes. Richard Neidich photo.

WHAT'S "DE" STORY ON THE SPELLING OF LEE DE FOREST?

Part III. Author's and Editor's Dilemmas

© 2015 Eric P. Wenaas

In Part I it was established that the statement in Lee de Forest's autobiography, "*While at Yale my brother and I resumed the style of earlier generations*" was false, and also that "*the style of earlier generations*" was not "de Forest" as asserted.¹ It was also established that Lee used the DeForest spelling until two years after he graduated from Yale. At that time he began to use the "de Forest" form in his signature, and this form also began to appear in the byline of a number of his publications. However, substantial data were provided in Part II to demonstrate that the De Forest and DeForest forms of Lee's surname also appeared in the byline of his publications—and at least as often as the de Forest form. The De Forest and DeForest forms also appeared more often in newspapers, electrical journals and mass media magazines than the de Forest form.

Since Lee never explicitly expressed a preference for the spelling of his name—notwithstanding claims to the contrary referencing the discredited citation in de Forest's autobiography—it would appear that common usage has trumped the spelling Lee used in his signature. In short, there is historical precedence for using any one of the three common forms of Lee's surname in narratives describing Lee and his life—de Forest, De Forest or DeForest.

That leaves authors and editors free to

choose among the three forms of spelling and yet retain historical integrity and accuracy. In fact, authors and historians from Lee's day to this day have used all three forms of spelling when writing about DeForest. Because all three forms were used so often and so indiscriminately by so many people, including Lee himself, there exist a number of problems in the mechanics of writing about DeForest, regardless of which form is chosen. The objective of this installment is to examine these potential problems and suggest ways to avoid them.

Authors who choose the de Forest form

Author	Short Title	Date
G. Carneal	Conqueror of Space	1930
W. Maclaurin	Invention and Innovation	1971
G. Tyne	Saga of the Vacuum Tube	1977
H. Aitken	The Continuous Wave	1985
T. Mayes	Wireless Communication	1989
T. Lewis	Empire of the Air	1991
J. Hijiya	Lee De Forest	1992
S. Hong	Wireless	2001
G. Weightman	Magic Box	2003
M. Adams	Lee De Forest	2012

Table 1. Ten often-referenced books by well-regarded authors who used the de Forest form of spelling.

for Lee's surname face more problems than those who use either the De Forest or DeForest forms, primarily because the de Forest form results in a "two-tier" system in which de Forest refers uniquely to the man, and De Forest or DeForest refers uniquely to his eponymous companies. (None of these companies was incorporated with the

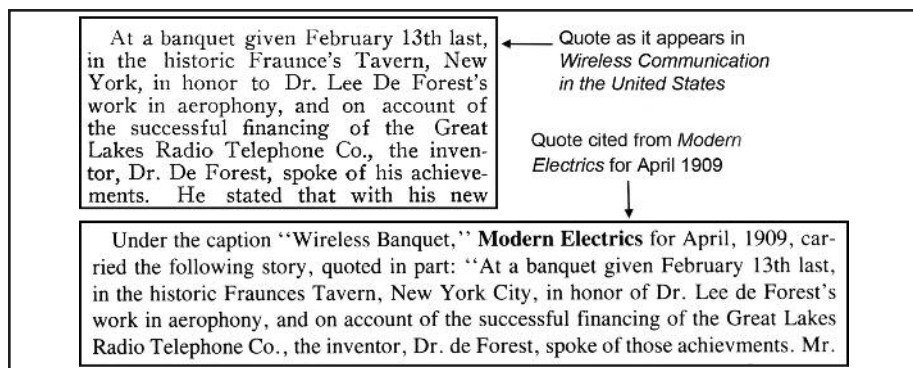


Fig. 1. When quoting from original documents, many authors such as Thorn Mayes replaced the original "De Forest" spelling with the "de Forest" spelling.

de Forest spelling, and the de Forest spelling was rarely used by any of the companies when referring to its name.ⁱⁱ)

Since the two spellings have different meanings in a two-tier system, the author must pick the proper spelling to convey the appropriate meaning on a case-by-case basis. To the uninitiated, this may seem like a trivial matter, but a review of the writings by authors who chose a two-tier system reveals that it is much harder to make the proper choice of spelling than one might think. A review of the literature reveals that even the most qualified and knowledgeable authors who used the de Forest form had difficulties with the spelling. These difficulties were examined by using examples taken from ten popular books about Lee written by well-regarded and often-referenced authors who used the de Forest form (see Table 1). It becomes clear from a survey of these books that many of their authors were overzealous in using de Forest in lieu of De Forest or DeForest forms in the particular circumstances described below.

In Quotations

When writing about de Forest, many authors replaced the De Forest or DeForest spellings appearing in cited sources with the de Forest spelling when placing these citations in quotes. Most style manuals state that, with the possible exception of obvious spelling errors, quotations should be left exactly as quoted. Errors left in place are gen-

erally indicated by "[sic]," which means quoted exactly as it stands, and words that replace or add to the cited material are enclosed by brackets. It certainly cannot be said that the De Forest form falls into the category of an obvious spelling error. Changing the spelling in these quotes may change the meaning of the quote, and may also give the reader the impression that the original source used that spelling, thereby adding to the impression that the de Forest form is the one most often used, if not the correct one.

In three of the ten books surveyed, the de Forest form replaced the De Forest form that appeared in the original citations, as exemplified by Fig. 1. In only one book was the De Forest form unchanged, and in the remainder, no citations with Lee's surname were found. It should be no surprise that all quotes in de Forest's *Father of Radio* used the de Forest form, a number of which appeared as De Forest in the original citations.ⁱⁱⁱ

In Reproduction of Historical Documents

When authors reproduce portions of historical documents in print, there is an expectation that the reproductions are accurate and represent the original text as faithfully as possible. In two of the books, the authors reproduced the layouts and texts that were obviously intended to be representations of the original. However, without comment, they changed spelling of De Forest as it

appeared in the original document to de Forest (for example, see Fig. 2). The reader is left with the false impression that the de Forest form appeared in the original.

In Book Titles and Author's Names

Books and magazine articles were often cited in the works on de Forest. Four of the ten authors altered the title of DeForest's autobiography, *Life and Work of Lee DeForest*, which was serialized in thirteen issues of *Radio News*, by replacing the DeForest spelling with de Forest (see Fig. 3). Two of the ten authors altered the title of Georgette Carneal's authorized autobiography of DeForest by substituting the de Forest spelling for the DeForest form that

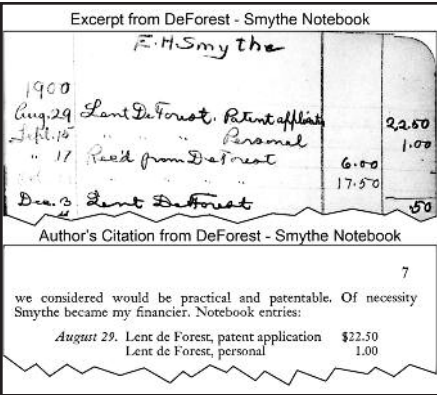


Fig. 2. When reproducing the layouts and texts of original documents, several authors changed the spelling of De Forest as it appeared in the original document to de Forest—for example, as in the reproduction of this citation from the DeForest-Smythe notebook dated 1900. (Perham de Forest Papers, History of San Jose)



Fig. 3. Four of the ten authors altered the title of DeForest's autobiography, "*Life and Work of Lee DeForest*," which was serialized in thirteen issues of *Radio News* (Oct. 1924 to Oct. 1925) by replacing DeForest with de Forest.

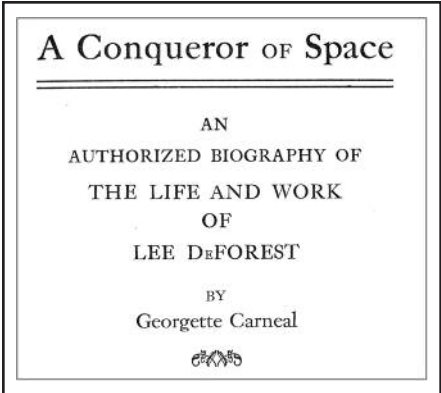


Fig. 4. Two of the ten authors altered the title of Carneal's authorized autobiography by substituting the de Forest spelling for the DeForest form, which appears on the title page of the book shown here.

appears on the title page of the book (see Fig. 4). Most style manuals also suggest that when the spelling of the author's name is different from citation to citation, it should be spelled as it actually appears in each citation. This custom was not always followed.

In Names of Lee's Eponymous Companies

All of Lee's eponymous companies were incorporated using either the De Forest or DeForest spellings. Strangely, while the de Forest spelling was never commonly used, over half of the ten books surveyed used the "de Forest" spelling for individual eponymous companies, for example the "American de Forest Wireless Co." Many of these authors were inconsistent, often using both the de Forest and De Forest forms for the same company in the same document. Some authors also used the phrase "de Forest Companies," which, when used with a capital "C," implies the company names were spelled "de Forest."

Consistency

One rule above all others cherished by publishers and editors is that of consistency. In a number of books, the inconsistencies in the spelling of "de Forest" versus

De Forest” in parallel applications were on such a scale that they could not be considered random. One example has already been cited: two spellings of the same eponymous companies in the same book. Inconsistent spelling of several other De Forest companies appeared in a number of the other books surveyed. Additional examples of observed inconsistencies were the use of both “De Forest 20 tube” and “de Forest 20 tube,” “De Forest Collection” and “de Forest Collection,” “Henry De Forest” and “Henry de Forest,” and “De Forest” and “de Forest” when referring to Lee in mid-sentence.^{iv}

In one book using the de Forest surname, the De Forest form was used in lieu of de Forest in mid-sentence no less than four times for no apparent reason. In another book, the de Forest form was used in place of the De Forest form to begin a sentence in one case only. These are just some of the examples of inconsistencies that were readily found by a quick scan of the ten books; considering this was a superficial sampling, it is likely there are many more inconsistencies associated with the use of Lee’s surname.

The scope of these errors indicates that the normal editing techniques such as the use of multiple proof readers, professional editing support from publishing companies, and computer spell-checking routines do not work well for Lee’s surname in a two-tier system. In many instances, only the author knows for sure which form of spelling was intended. The author who writes a lengthy manuscript using a two-tier spelling system, complete with extensive references, endnotes and a bibliography will face a monumental task in spell-checking de Forest and De Forest in the editing phase of the book.

The Different Meanings of De Forest and de Forest

The problems identified above can be redressed with a judicious application of accepted rules from selected manuals of style accompanied by appropriate editing instructions. However, in a two-tier spelling system, the de Forest and De Forest

**Announcing
a New Product!**

Designed for Reliable
Long Distance Communication
on
1 Meter to 200 Meters

INPUT RATING 150 WATTS
Plate Voltages 1000-3000
Plate Currents 40-50 MA.
Fil. Voltage 10
Fil. Current 2.35A

Sold and Shipped Direct
Upon Receipt of Money Order

Price, \$18.00



**DE FOREST
TYPE-H
TRANSMITTING TUBE**

DE FOREST RADIO CO., 120 Sherman Ave., Jersey City, N. J.

Fig. 5. It was and still is common practice to designate hardware made by the De Forest companies with the company name—as in the ad for the De Forest Type-H transmitting tube shown here. (QST, Jan. 1926, p.1)

spellings have different meanings, differences that can be particularly significant when the surname is used as an adjective. The de Forest spelling when used as an adjective refers to an object associated with Lee himself such as an Audion that he developed or designed—as distinct from the De Forest spelling, which refers to an object associated with one of his eponymous companies such as an Audion with a “Type” designation that was manufactured and sold by one of the companies.

It appears that the majority of the authors surveyed did not give much thought to the appropriate form of spelling for Lee’s surname when used as an adjective. The default spelling selection seems to have been de Forest in most cases. For example, consider the following sentence taken from one of the books in the survey: “The first new de Forest transmitting tube in this period [1923-1926], the Type H, was advertised in

January 1926.”^v The “de Forest” spelling used here to describe the H transmitting tube is inappropriate for two reasons. First, the Type H tube was made by the De Forest Radio Company, a company with which de Forest had no association except as a consultant. Second, and more to the point, it was and still is a common practice to use the company name when describing tubes assigned a “Type designation”—in this case, the De Forest Type H tube (see Fig. 5).

There are other examples where the correct form is not so obvious. More than half the authors used the “de Forest” spelling in the phrases “de Forest responder” and “de Forest system,” even though both expressions were almost universally spelled with the company name (De Forest or DeForest) in contemporaneous documents published by the De Forest companies and electrical journals of the day (see Fig. 6). Recall that Lee did not design the system alone. He and Ed Smythe designed and received a patent for the responder, and Clarence Freeman designed and received a

patent for the transmitter. To use the de Forest spelling with either term is historically inaccurate, and gives the reader the impression that Lee alone developed the responder and the De Forest system.^{vi}

The cynic might say that making these distinctions amounts to splitting hairs, and that authors should be given some latitude. Perhaps. However, authors who choose to distinguish between the man and his eponymous companies by using a two-tier spelling system must be prepared to follow through and implement it correctly. That means following both publication standards and historical precedence when choosing the spelling of Lee’s surname. Based on the survey of the ten authors using the two-tier spelling system for Lee’s surname, neither publication standards nor historical precedence is being followed well. As a result, books are filled with inconsistencies, and readers are getting the false impression that the “de Forest” form appeared much more often in original contemporaneous documents than it actually did.

A one-tier spelling system not only relieves the author of having to distinguish between or among the various spelling options in most instances, but it also provides a convenient method of referring to Lee’s surname in the descriptive narrative when it is desirable to blur the distinction between a reference to the man versus a reference to the company. For example, consider this quote from original material appearing in *Radio Broadcast* magazine, which used a single-tier spelling system where the man and the company were both spelled De Forest: “*It appears that the De Forest agreement which would permit the Westinghouse Electric and Manufacturing Company to manufacture tubes would not permit the Westinghouse Lamps Works to do so, even though it is acknowledged by all that the Lamp Company is simply that part of the Westinghouse Company that had the facilities for making tubes.*”^{vii}

The conscientious author who wants to paraphrase this agreement using a two-tier spelling system is immediately faced with having to determine if the agreement was



Fig. 6. More than half the authors surveyed used the “de Forest” spelling in the phrases “de Forest responder” and “de Forest system,” even though both expressions were almost universally spelled De Forest or DeForest in publications prepared by De Forest Companies such as the one shown here placed by the American De Forest Wireless Tel. Co. (New York Times, Feb. 1, 1903, p. 30.)

made by the De Forest Company or by Lee De Forest as an individual. If the former, the De Forest spelling is required; if the later, the de Forest spelling is required. Either one is equally plausible because the agreement granting patent rights to RCA could have come through Lee's assignment of rights to AT&T, or by an agreement between RCA and either De Forest Radio Telephone and Telegraph Co. or Lee De Forest Inc. Since a vast number of original documents use a one-tier system of spelling (either De Forest or DeForest), this dilemma arises frequently.

Spelling of Lee's Eponymous Companies

Another factor to consider is the spelling of the eponymous companies related to DeForest, the most relevant of which are listed in Table 2 along with the most relevant non-eponymous companies. It seems clear from the inconsistent spelling of the eponymous companies in the books surveyed that most authors were unsure of the spelling. Only one author actually gave a reference to the spelling of any of the companies, and that was to an unpublished document written by Thorn Mayes. In fact, Thorn Mayes book, *Wireless Communication*, published in 1987 appears to be the only published document that has attempted to record the spelling of the principal DeForest-related companies based on incorporation papers. Unfortunately, Mayes equivocates in his book about the spelling of both the De Forest Wireless Telegraph Co. and the American De Forest Wireless Tel. Co. by initially

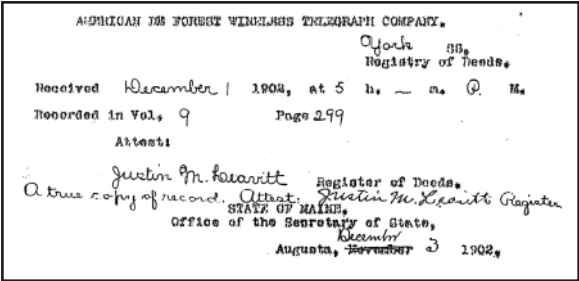


Fig 7. Incorporation documents for the American De Forest Wireless Tel. Co. dated Dec. 3, 1902 used the DE FOREST form of spelling (with a space).

stating that, based on incorporation papers, they were both spelled DeForest without a space, but later using the De Forest form (with a space) for both companies.^{viii}

A check with the Secretary of State of Maine revealed that incorporation documents for the American De Forest Wireless Tel. Co. dated Dec. 3, 1902 used the DE FOREST form of spelling with a space (see Fig. 7). Because of the capital letters used in the incorporation documents, it cannot be determined whether the company was incorporated with the “de Forest” or the “De Forest” spelling. However, in a later amendment to the by-laws of the Company filed March 12, 1904, the name of the company was spelled American

Most-Significant De Forest-Related Radio & Film Companies	Incorporation	
	State	Date ¹
Wireless Telegraph Co. of America	NJ	9/23/1901
De Forest Wireless Telegraph Co.	ME	2/19/1902
Amer. De Forest Wireless Telegraph Co.	ME	12/3/1902
De Forest Radio Telephone Co.	NY	3/7/1907 ²
Radio Telephone Co.	NJ	5/17/1907 ³
North American Wireless Telegraph Corp.	ME	11/4/1909
Radio Telephone & Telegraph Co.	DE	12/10/1913
De Forest Radio Tel. & Telegraph Co.	DE	9/26/1914
Lee De Forest Inc.	CA	3/27/1920
De Forest Phonofilm Co.	DE	3/14/1923
De Forest Radio Co.	DE	9/27/1924

¹ Dates taken from state incorporation documents unless otherwise noted

² *New York Times*, March 7, 1907, p. 13.

³ *New York Times*, May 18, 1907, p. 11.

Table 2. Spelling and incorporation dates for the most relevant De Forest-related companies extracted from documents found in Departments of Corporations archives in the respective states indicated.

THE American DeForest Wireless Telegraph Co

Offers the Following Advantages to Investors :

- 1—The DeForest System has demonstrated its superiority over foreign systems in all Government tests, as witnessed by contracts awarded over competitors.
- 2—DeForest has developed his system on lines radically different from the European systems. In basic quality and range of patents the system is supreme.
- 3—The policy of erecting commercial stations and doing actual commercial work has given the Company Commercial supremacy in the Western Hemisphere,—a strength of organization and equipment which is the best guarantee against competition.
- 4—The receipts from the sale of securities are devoted to commercial development. The Company's fiscal agents are identified with it, and do not, as middlemen, divert to their own profit the receipts from investors.
- 5—To provide for the rapid extension of its commercial service, The American DeForest Wireless Telegraph Company now offers its First Mortgage Convertible Bonds at par in denominations of \$100, \$500 and \$1000. These bonds, which cover all assets, now yield 6% annually, and, being convertible at holder's option into 7% preferred cumulative and participating stock, have all the advantages of this stock. The bonds will appreciate far above par, and the right is reserved to advance their price without notice.

SUBSCRIPTIONS SHOULD BE SENT TO

AMERICAN DE FOREST WIRELESS TELEGRAPH COMPANY

1154 Old South Building, Boston, Mass. C. M. Nichols, Manager

Write for particulars regarding DeForest Commercial service on land and sea.

Fig. 8. American DeForest Wireless Tel. Co. published numerous advertisements for stock with the two different spellings; this ad used the two different spellings in the same ad. (Boston Evening Transcript, April 8, 1905, p. 8)

De Forest Wireless Telegraph Company. As for the DeForest (or perhaps De Forest) Wireless Telegraph Company, the company name was handwritten in script with a space between De and Forest, which is typical for either form—De Forest or DeForest. Thus, the presence or absence of a space in the De Forest spelling cannot be determined.

The precise spelling of these company names may be of academic interest, but as a practical matter, the two companies used both the De Forest and DeForest spellings equally, interchangeably and indiscriminately. While it is beyond the scope of this paper to document this practice, several examples are in order. The American De Forest Wireless Telegraph Company issued stock certificates with both spellings,^{ix} and it published numerous advertisements for stock under the two different spellings—some of which used the two dif-

ferent spellings in the same ad (see Fig. 8).

The letterheads of Abraham White, president, used the DeForest spelling, while Lee's letterheads used the De Forest spelling.^x As for the De Forest Wireless Telegraph Co., it also published ads for stock sales with both spellings, although rarely, if ever, in the same ad. A stock certificate was issued using the De Forest



Fig. 9. While Mayes claimed that the DeForest Wireless Telegraph Co. was spelled DeForest without a space, stock certificates for the company use the De Forest spelling with a space.

Ad Appearing in June 1917 Issue of *Electrical Experimenter* on Page 84

TYPE OJ3—\$400.00 COMPLETE
Oscillon Telegraph, capable of transmitting the voice 15 miles, or telegraphic messages 40 miles. Larger transmitters for greater ranges.



TYPE EJ2—PRICE, \$32.00
NEW AUDION AMPLIFIER FOR INCREASING STRENGTH OF RECEIVED SIGNALS 25 TIMES.
It is not a detector in any form.



TYPE "S"—\$60.00
De Forest "Oscillon"
(Oscillating-Audion)

Generator of absolutely undamped oscillations of any frequency. Permits Radio Telephone speech surpassing in clearness that over any wire. For Laboratory and Research Work has a field utterly unfilled. Patents issued and pending.

—MANUFACTURED BY—
**DE FOREST RADIO TELEPHONE
AND TELEGRAPH COMPANY**

NEW YORK CITY

Office and Factory
1391 SEDGWICK AVE.

Cable Address:
RADIOTEL, N. Y.

TYPE RJ11—2500—12000 METERS, \$35.00
THE DE FOREST LOADING INDUCTANCE

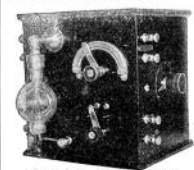


TYPE VC4—PRICE \$20.00
VARIABLE CONDENSER

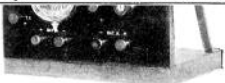
This Condenser is similar to our commercial type but is enclosed in an oak cabinet. It has 35 semi-circular aluminum plates. The maximum capacity is approximately .0025 M. F.

Ad Appearing in Sept 1917 Issue of *Electrical Experimenter* on Page 290

TYPE OJ3—\$400.00 COMPLETE
Oscillon Telegraph, capable of transmitting the voice 15 miles, or telegraphic messages 40 miles. Larger transmitters for greater ranges.



TYPE EJ2—PRICE, \$32.00
NEW AUDION AMPLIFIER FOR INCREASING STRENGTH OF RECEIVED SIGNALS 25 TIMES.
It is not a detector in any form.



TYPE "S"—\$60.00
DeForest "Oscillon"
(Oscillating-Audion)

Generator of absolutely undamped oscillations of any frequency. Permits Radio Telephone speech surpassing in clearness that over any wire. For Laboratory and Research Work has a field utterly unfilled. Patents issued and pending.

—MANUFACTURED BY—
**DEFOREST RADIO TELEPHONE
AND TELEGRAPH COMPANY**

NEW YORK CITY

Office and Factory
1391 SEDGWICK AVE.

Cable Address:
RADIOTEL, N. Y.

TYPE RJ11—2500—12000 METERS, \$35.00
THE DEFOREST LOADING INDUCTANCE



TYPE VC4—PRICE \$20.00
VARIABLE CONDENSER

This Condenser is similar to our commercial type but is enclosed in an oak cabinet. It has 35 semi-circular aluminum plates. The maximum capacity is approximately .0025 M. F.

Fig. 10. The De Forest Radio Telephone and Telegraph Co. used both De Forest and DeForest spellings interchangeably in exactly the same ads appearing in the same magazines spaced only a few months apart.

Wireless Telegraph Co. spelling with a space (see Fig. 9), and stationery with the De Forest spelling (also with space) has been observed. However, an agreement was found between the DeForest (no space) Wireless Telegraph Co. and its predecessor, the Wireless Telegraph Co. The *Annual Report of the Board of State Assessors of the State of Maine* for the years 1902-1907 carried the name on its books spelled both ways, although in different years.

Another eponymous company formed in the first decade of the 1900s was the DeForest (or perhaps De Forest) Radio Telephone Company incorporated in New York. Based on incorporation records, Mayes claims that this company was incorporated with the De Forest spelling (with a space). However, no incorporation papers were found in a search by archivists of corporate records at the Department of State of New York, and since this company was

succeeded by a new company—the Radio Telephone Co.—two short months later, no company documents or ads have been found. However, a ubiquitous ad for stock offerings in the North American Wireless Corporation appeared in 1910 listing ten amalgamated companies including the DeForest Radio Telephone Co. using the DeForest spelling (without a space).

The four remaining De Forest Companies in the table were organized with incorporation papers (or renamed) using the De Forest spelling (with a space). However, like the eponymous companies formed earlier, these four companies used both the De Forest and DeForest spellings equally, interchangeably and indiscriminately in brochures, catalogs, and ads such as the pair shown in Fig. 10. The DeForest Radio Company used both forms in ads and on stock certificates (see Fig. 11). Not only did the companies themselves use both

spellings, but so did authors, editors, historians and many State and U.S. courts.

Common usage causes many companies to adopt a spelling different from that used in the incorporation papers, particularly ones with the particle “de” or “du.” Consider for example, DuPont, which was incorporated under the name E. I. du Pont de Nemours and Company. Today, the du Pont Company commonly uses the DuPont spelling, as indicated by the following introductory phrase often appearing in company documents: “The terms ‘DuPont’ or the ‘company’ as used herein refer to E. I. du Pont and Company and its subsidiaries...”^{xi} The “Du Pont” spelling is also widely used by DuPont in its ads.

Since Lee’s eponymous companies used both the De Forest and DeForest spellings about equally—and certainly indiscriminately, and that various authors editors, publishers, and institutions used one form or the other, means that there is ample historical precedence for using either spelling for the companies—meaning that the one-tier system of spelling using either the De Forest or the DeForest spelling is historically accurate.

Summary

It is clear that both a two-tier spelling system and a one-tier system using either the De Forest or DeForest spelling for both the man and his eponymous companies is historically justified. The big advantage of using a single-tier system is that a single form of spelling can be used in the narrative of a manuscript without having to decide whether each reference is to the man, the company or both. In cases where it is necessary or desirable to make the distinction, it can be made by simply adding the word “Company” to the surname, or by inserting Lee or Dr. in front of the surname.

Whichever spelling system is used, there are certain accepted styles of usage that have been developed and incorporated in manuals, and these rules should not be suspended when using Lee’s surname. The spelling of the surname should not be altered in quoted material, in the titles of



Fig. 11. Stock certificates of the De Forest Radio Company were issued with both the De Forest spelling (with a space) and the DeForest spelling (without a space).

cited documents, or when reproducing text appearing in historical documents. Most manuals recommend that, when the author’s name is spelled differently, the spelling as it appears in each cited document should be used. The spelling of Lee’s surname when used as an adjective should be consistent with historical precedence and usage, and the spelling for each usage should be consistent within a given document. It is clear from the survey of the ten references cited here that these rules are often ignored by authors who use the two-tier system with the de Forest spelling.

In the fourth and final installment, the disparate topics presented in the first three installments will be assembled into a chronological account of how Lee DeForest’s surname morphed over time from DeForest into three separate and distinct spellings that were often used by both Lee himself and others. It will also be shown that a host of venerable institutions including large city newspapers, the U.S. Patent Office, and the Federal and State court system had a major role in the morphing process by using systems with either the De Forest or DeForest spelling—but rarely, if ever, the de Forest spelling. A strong case will be made for using the single-tier spelling system.

REFERENCES

- ⁱ L. de Forest, *Father of Radio*, (Wilcox
(continued on page 48)

TRACING THE BIRTH OF RCA

The creation of the powerful Radio Corporation of America was the culmination of a complex series of events that also resulted in an unusual involvement by the United States Navy in radio matters, including implications for amateur radio.

In 1914, as the war in Europe escalated, the United States was determined to remain neutral. But it was confronted with the serious complication presented by the existence of foreign-owned commercial radio telegraph stations within the jurisdiction of the U.S. These stations provided essential and sometimes critical communication of messages and press to and from stations abroad, particularly in Europe, and ships at sea. The Government took steps to minimize the possibility of these stations handling any traffic which could compromise the neutrality of the country.

Addressing the dilemma of maintaining the neutrality of the content of radio traffic on August 5, 1914 President Woodrow Wilson issued a proclamation of radio neutrality. The proclamation specifically prohibited radio stations from receiving or transmitting any messages compromising the position of the United States or aiding the warring parties.

The order was directed to the Secretary of the Navy rather than to the Department of Commerce's Bureau of Navigation. Since the former was empowered by the Congressional Radio Act of August, 1912,¹ it was heretofore responsible for all licensing and radio regulation. In turn, execution was delegated to the Naval Radio Service, which was advised to cooperate with the Bureau of Navigation.

The Navy, as a facet of war, wanted the ability to regulate, monitor and if necessary silence radio communica-

tions involving the United States.

The Navy moved quickly to disseminate the conditions of the executive order to all interested parties and to establish enforcement procedures. At the time, the Navy was the predominant U.S. user of radio—with extensive ship and coastal facilities. This new authority was the achievement of the Navy's ambition to control all radio activities in a military manner.

The surveillance of the dominating foreign-owned commercial radio stations within the jurisdiction of the United States was a priority undertaking. Navy censors were stationed at the German stations at West Sayville, Long Island, New York and Tuckerton, New Jersey; and the American Marconi² stations at Siasconsett, Nantucket; South Wellfleet, Massachusetts; and New Brunswick, New Jersey.

All operators, with the exception of the American Marconi Company, accepted the regulations. American Marconi vigorously protested the legitimacy of the censorship. While American Marconi sought legal relief their station at Siasconsett received and forwarded an obviously un-neutral message from the British Cruiser *Suffolk* to New



David Sarnoff with Guglielmo Marconi at Radio Central Rocky Point, 1933.

York chandlers requesting that supplies be delivered off Sandy Hook circumventing the censors.

In response the Navy closed this station for almost ninety days at the end of 1914. Under duress, American Marconi agreed to conform to the Navy regulation and did so throughout the war under stringent Naval control. The Navy also took over control of the Homag,³ German station at Tuckerton for the U.S. Government designating it as the clearing station for all questionable messages.

Despite the precautions in May, 1915 the German station WSL at Sayville⁴ managed with subterfuge to transmit two decidedly not neutral messages in diplomatic code. The first informed submarines of the location of *SS Lusitania*, enabling the U-20 to torpedo the liner off Ireland with the loss of 1,198 lives, 128 of whom were American. This action played a significant role in turning public opinion against Germany.

The second incident was the relay of a message from German Foreign Minister Zimmermann to Mexico asking that country to join with Japan and attack the United

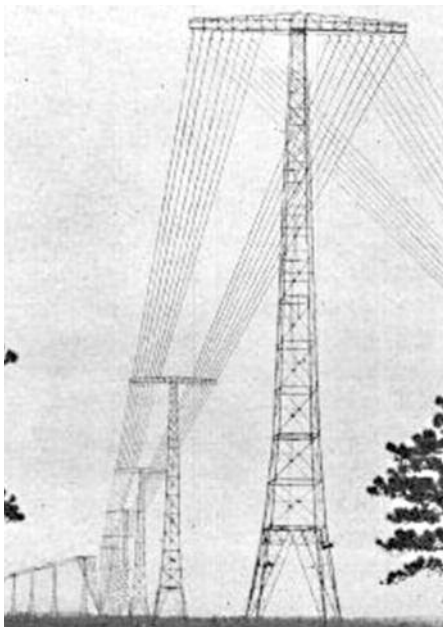
States. Additional violations were transmissions, recorded by amateur 2MN, concerning allied and neutral shipping to POZ, the base station at Nauen, Germany. Consequently the Navy took over the operation of the station. The station's principals, Dr. George Karl Frank, general manager and Dr. J. Zennick engineer and operations manager were interned.

On April 7, 1917 the U.S. entered the war and the Government began the process of establishing radio as a Government monopoly and the ultimate establishment of American radio supremacy. All commercial as well as amateur use of radio was banned. The Navy literally ruled the air waves and looking to the future, purchased the Federal Telegraph Company⁵ plus several of American Marconi's stations. However, the Congress upon discovery of these purchases ordered the Navy to return the stations to their original owners. These events underscore the determination of the Navy to have radio and international communications fully under their U.S. domination.

On the eleventh hour, of the eleventh day, of the eleventh month of 1918 the "war to end all wars" ceased and the warring parties set about establishing the terms of the armistice. The Navy persisted in its reign over all radio in the United States aggressively seeking to place all wireless communication interests in the control of American companies even though none existed and this would be monopolistic.

The dominant Marconi Wireless Company of America continued extensive operations and sought anxiously to obtain exclusive rights to purchase Alexanderson generators⁶ from the General Electric Company. Perceiving an opportunity, the Secretary of the Navy with the subtle approval of the President, encouraged the General Electric Company to purchase all the British owned stock of American Marconi.

The purchase was accomplished with an intricate exchange of preferred stocks and cross-licensing agreements, and resulted in the 1919 creation of the patriotically named and, importantly, entirely American-owned Radio Corporation of America (RCA). The



Part of the huge antenna system at Radio Central.

new company was soundly founded possessing all the property, contracts with maritime operators, licenses, patents and facilities of the former entity.

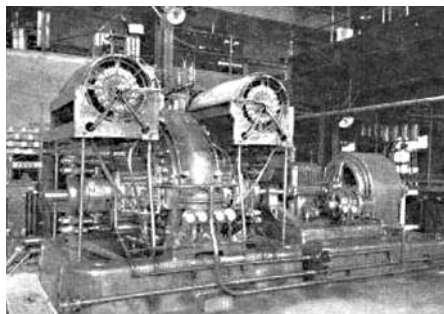
The creation of the new firm was not contested and it was privileged by certain Navy licenses and rights. Shortly afterward, RCA purchased the International Radio Telegraph Company owned by The Westinghouse Electric & Manufacturing Company which in turn had licensing agreements with the Western Electric Company. Consequently, General Electric and Westinghouse became corporate partners in RCA. The Radio Corporation was now not only the dominant radio telegraph entity worldwide but was positioned to succeed in the coming boom of broadcast radio with David Sarnoff at the helm.

However, as far as amateurs were concerned, the radio world was dim, literally and figuratively. The Navy treated amateurs with ambivalence; they were both a source of trained operators and a nuisance to be contended with on the air—causing interference and using valuable spectrum.

There was a movement in Congress to sustain the Navy's control of radio, which was stifled in committee partially by a letter campaign encouraged by the American Radio Relay League. But the League was in crisis, struggling to survive the effects of the war on its membership base. However, with strong leadership the League reorganized, put itself on sound financial footing and continued to apply influence to have amateur privileges restored.



Hiram Percy Maxim.



An Alexanderson high frequency alternator capable of putting 700 amperes of high frequency current into the antenna.

The results came in quick succession. On April 12, 1919, five months after the Armistice, the Navy lifted the ban on amateurs receiving; the first post war issue of *QST* was printed in June; last ditch efforts attempts by the Navy to sustain its control by Congressional action were defeated; and finally on September 26, 1919 the Navy announced the lifting of all restrictions on amateurs. The announcement was accompanied by the Executive statement that the Department of Commerce-Bureau of Navigation was to resume authority over the radio services as before the war.⁷

On August 31, 1921 President Hiram Percy Maxim convened the first ARRL National Convention in Chicago. He termed the amateurs "pioneers" and exhorted them to be steadfast in their faith and loyalty to one other. Secretary of Commerce Herbert Hoover sent the gathering of more than nine hundred amateurs a radio message stating that the Department of Commerce was by Congressional action the legal "Patron Saint" of amateur wireless operators—a far cry from the attitude of the Navy and a measure of the progress of amateur radio.

NOTES

- ¹ Public Act No.264.
- ² Although termed "American" the Marconi ownership and management was largely British. At this point Britain was a combatant and not yet an ally.

- ³ Hochfrequenz-Maschinen Aktiengesellschaft für Drahtlose Telegraphie (Homag) built this station for the French entity Compagnie Universelle de Telegraphie et Telephonie (C.U.T.T.) but never turned it over, maintaining operation and communication with its sister station in Eilvese, Germany.
- ⁴ This station was owned and operated by the Atlantic Communication Company, a New York corporation with no visible connections to Germany. However, the station was of “Telefunken” design and its sister station was in Nauen, Germany.
- ^{4&5} Above. The sister stations at Eilvese and Nauen, Germany were both operated by the German National Post Office.
- ⁵ A U.S. company and the leading commercial operator on the west coast.
- ⁶ The then “state of the art” radiotelegraph transmitter. An AC alternator run at extremely high speed—could put out 200 kW or 100 amperes of current at 2,000 volts with a frequency of 18,000 cycles.

This output was fed to a transformer stepping up the voltage to 7,000 volts which was then fed to the antenna system. In 1921 the Radio Corporation opened its “Radio Central” facility at Rocky Point, Long Island, New York with two of a planned ten alternators feeding a immense circular antenna system comprising twelve towers and one and a half miles long. The long wave system provided reliable international transmissions until it was discovered shortly after the station went into service that short waves transmitters could provide better results at considerably less power and cost. The transmitter was developed by Swedish engineer and radio pioneer Ernst Alexanderson, who was employed at General Electric in Schenectady, New York, and was later chief engineer at the Radio Corporation of America.

- ⁷ DeSoto, Clinton B. Two Hundred Meters and Down. West Hartford, Connecticut, American Radio Relay League, September, 1936.

DE FOREST, continued from page 44

- & Follet Co., Chicago, 1950) p. 11-13.
- ii The stylized logo “de Forest,” which always appeared in cursive writing, was a registered trademark that was often used in advertising, but the de Forest spelling was rarely used for the names of the companies.
- iii Three alterations in quotes in de Forest’s *Father of Radio* appear on p. 43 (*Electronic in Industry*, 1943), p. 228, (*New York Daily Tribune* (3/1/1907), and p. 255 (*Evening Journal, Jersey City* 2/20/1909).
- iv It is axiomatic that the first letter in a sentence is capitalized regardless of the actual spelling.
- v The reference appearing in this book was cited as: “De Forest Radio Company advertisement in *QST*, Jan. 1926, 10:1.” The author was describing the time period between 1923 and early 1926
- vi The De Forest system was based on four patents: U.S. No. 716,203 filed by L.

De Forest & E. H. Smythe on Sept 1, 1900, U.S. No. 773,069 filed by C. E. Freeman on Jan. 14, 1901, U.S. No. 720,568 filed by L. De Forest on March 6, 1901, and U.S. No. 716,000 filed by L. De Forest & E. H. Smythe on July 5, 1901.

- vii “Vacuum Tubes in Another Legal Tangle,” *Radio Broadcast*, Vol. 7, May 1925, p. 41.
- viii Thorn Mayes, T. Mayes, *Wireless Communication in the United States*, (New England Wireless and Steam Museum, 1989) pp. 29-56.
- ix See both spellings in American DeForest Wireless Telegraph Co. certificates in T. Mayes, *Wireless Communication in the United States*, pp. 31 & 32.
- x Perham de Forest Papers, History of San Jose, Box 10.
- xi This phrase often appears in its financial documents, for example, in its 1914 10K financial reports.

RADIO RAMBLINGS

BY **JIM COOK, W00XX**, 21903 W. 57TH TERRACE, SHAWNEE, KS, 66226—PLEASE INCLUDE SASE FOR REPLY.
E-MAIL: radiomanjim46@yahoo.com

Tuning Radio Transmitters with Neon Lamps

When I was twelve years old my father, W0ELO (SK), set up a 40-meter CW amateur radio station in our home using a James Millen 6L6/807 exciter and the Hallicrafters S-38C receiver that I used for short wave listening. The whole process was interesting and exciting to me, but the thing I remember most was how a neon lamp held near the final amplifier tank coil would glow even though it had no electrical connection to it.



A 2-watt neon lamp by General Electric.

Although I have seldom seen transmitter tuning with neon lamps recommended in radio textbooks as an approved practice, the technique was apparently common before radio transmitters were enclosed in metal cabinets to suppress television interference and prevent electrocution. The plate current meter is a more accurate indication of resonance, but some old timers said that a meter reading only proved that current was flowing, while the neon lamp proved the presence of RF energy.

Holding a neon lamp near a transmitter's tank coil exposed the operator to both the possibility of RF burns and the risk of making contact with the transmitter's plate

power supply. For the uninitiated, an RF burn is a painful sore that develops when radio frequency energy makes contact with human skin. Such burns hurt intensely and heal slowly. The only visible evidence of an RF burn is a white spot on the skin, but the pain lasts for many days.

Using neon lamps for verifying radio transmitter operation is part of radio history. In World War II, portable transmitters, including the SSTR-1 suitcase radio used by OSS agents working behind enemy lines in Europe, were supplied with a small neon lamp. Operators were instructed to touch the lamp to the antenna to verify that the transmitter was working. For someone making clandestine transmissions under life-threatening circumstances, it must have been reassuring to know that the transmitter was producing RF energy.

When radio station WLW in Cincinnati, Ohio, was broadcasting with a 500,000 watt transmitter between 1934 and 1939 with an experimental license from the FCC, its intense electromagnetic field created a number of unusual effects. One of these involved a neon sign at a motel located near the transmitter site. The neon sign glowed continuously whenever WLW was on the air. The owner of the motel disconnected the electric power to the sign to reduce his utility bill.

But the phenomenon of producing light with RF energy, known as induction lighting, is not limited to neon lamps. Fluorescent lamps work equally well. When a friend of mine was in college, he used his mobile amateur radio transmitter to illuminate a fluorescent lamp. He discovered that this impressed some of the girls he knew. He would key his transmitter while holding the fluorescent tube near the antenna. After the lamp was illuminated, he would use his other hand to "wipe out" the light.

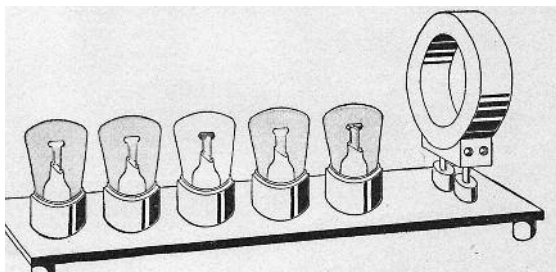
While browsing through radio periodicals from the 1920s, I ran across two interesting articles about a special tuning lamp that could serve not only as an indicator of RF energy, but could also be used to determine the operating frequency.

By 1926, radio engineers had discovered that a carefully sliced piece of quartz crystal would resonate at a frequency that was determined by its dimensions. Eventually, quartz crystals were used to accurately control the frequency of radio transmitters. But an article in the October 1926 issue of *Radio Age* magazine described an intermediate invention. Quartz crystals were connected in series with a loop of wire in a lamp filled with a mixture of helium and neon gas. They would glow when energized with radio frequency energy at their resonant frequency.

According to the *Radio Age* article, these devices were developed by two German scientists, Professor E. Giebe and Dr. A. Schiebe of Berlin. These were described as “light-resonators as frequency standards for the measurement of wavelengths.”

The September 1926 issue of *Popular Radio* magazine called these devices “glowing crystal tubes.” This article had an illustration showing how several of the tubes, connected in parallel with a pick-up coil and each tuned to a slightly different frequency, could provide a visual wave meter for accurately adjusting a radio oscillator. The *Popular Radio* article attributes these crystal tubes to a different German inventor, Dr. Sigmund Loewe. Perhaps he collaborated with the two scientists mentioned in the *Radio Age* article.

As I became more interested in the history of technology, I began to wonder who came up with the idea of lighting lamps



“Visual wave meter” using several “glowing crystal tubes” tuned to different frequencies and connected in parallel with a pickup coil (see text). From Popular Radio for September, 1926.

with RF energy. I discovered that this was one of the discoveries of Nikola Tesla.

Over the years, I read a number of books and articles about Tesla’s life and inventions. My informal research has been fascinating but frustrating because Tesla mixed science fact with science fiction without making any clear distinction between them. This genius, who had developed practical inventions such as three-phase electrical power systems, also talked about communicating with Martians and sending electrical power through the air to provide free electricity to everyone.

Newspaper reporters looked forward to interviewing Tesla because his bizarre ideas fascinated their readers. But his wilder comments undermined Tesla’s credibility among scientists and engineers who had previously admired his work.

One of Tesla’s confirmed accomplishments was the first demonstration of induction lighting. Tesla was a showman, and he often held gas-filled glass tubes near his famous Tesla coils to make them glow. In June 1891, he received a patent for this early form of induction lighting.

In an article published in *The New York World* newspaper in 1929, Tesla made the following statement regarding his earlier



Neon tuning lamp from Radio Age for October, 1926 could be used as a frequency standard.

patent for induction lighting:

Surely, my system is more important than the incandescent lamp, which is but one of the known electric illuminating devices and admittedly not the best. Although greatly improved through chemical and metallurgical advances and the skill of artisans, it is still inefficient, and the filament emits hurtful rays responsible for millions of bald heads and spoiled eyes. In my opinion, it will soon be superseded by the electrodeless vacuum tube which I brought out thirty-eight years ago, a lamp much more economical and yielding a light of indescribable beauty and softness

During the past two decades, lighting system manufacturers have adapted Tesla's invention to practical induction lighting systems. They do not claim to prevent baldness or reduce eye strain, but they do provide an energy-efficient source of good quality light. The lamps are usually in the form of a circular or rectangular glass fluorescent tube that has no electrodes. Radio frequency energy generated by a solid-state oscillator is coupled into the lamp by coils. In many applications, induction lighting can reduce energy consumption by 50% while providing lamp life typically rated at more than 50,000 hours.



CLASSIFIED ADS

Old-time ads are free to members collecting and restoring equipment for personal use. The AWA Journal classified ads are also available for browsing in the "AWA Journal On Line Edition" on our Internet Web site (www.antiquewireless.org). Please observe the following: (1) include as SASE if acknowledgement is desired; (2) material must be more than 25 years old and related to electronic communications; (3) give your full name, address and zip code; (4) repeats require another notice (we are not organized to repeat automatically); (5) the AWA is not responsible for any transaction; and (6) we retain the right to reduce an ad's size if over seven lines. Mail all ads to: RICHARD RANSLEY, 25 Smith St., Sodus, NY 14551-1007 or email to richardransley@mac.com.

SELL—GENERAL

The Vintage Radio and Communications Museum of Connecticut has begun a program to de-accession some radio sets. These will be parts sets and some restorable sets. Pictures, descriptions and a suggested donation amount will be listed on our website: www.vrmct.org under 'Adopt a Radio.' These items will be 'pick-up only' at the Museum. Additions to this page will be ongoing, so check the site periodically.

SELL—TUBES

Longtime tube collector thinning the collection: Blue Arcturus, 01-As brass and bakelite, 99s, 2-Digit Radio, Deforest DV/DL series, tubular Audions, Myers tubes, Moorehead tubes, Western Electric tennis balls. New and used, too many to list. Write or e-mail your wants. Jeff Arndt, 4021 South Parker Way, De Pere, WI 54115 Tel: 920-323-6789

WANTED—GENERAL

Want SE1070 and schematic/information for the 1920 receiver Model IP500 or SE143, Hal Layer, KK6HY, P.O. 620660, Woodside, CA 94062-0660 E-mail: KK6HY@arrl.net

WANTED—LITERATURE

Radio Craft 1938 to 1945 and *Radio News* 1938-1943. Richard Petersen, K0CAB, 1940 Grand Avenue, Marion, IA 52302-5013 Tel: 319-377-9126

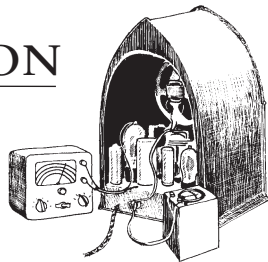
WANTED—PARTS

Battery cable for an Atwater Kent Model 20C. Gaylord Ewing, P.O. Box 144, Morris, NY 13808

EQUIPMENT RESTORATION

BY **DAN MERZ**, 1268 WHITE BLUFFS ST., RICHLAND, WA 99352
mdmradio@frontier.com

Submit restoration tips in Word, WordPerfect or plain text files with any illustrations in separate jpeg, tif or bmp files (not embedded in document).



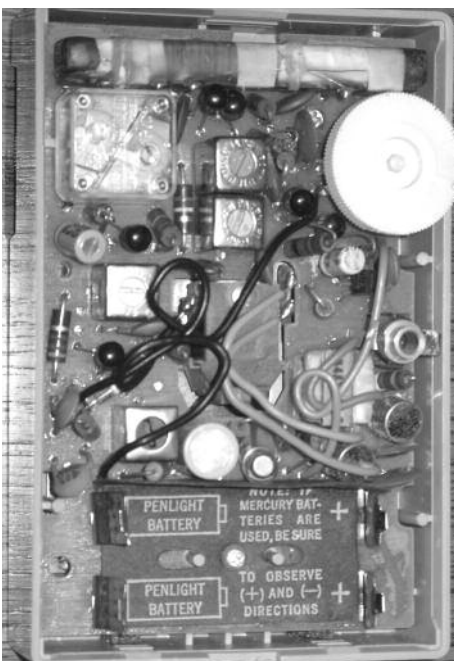
Repairing Transistor Radios

My interest in transistor radios was revived by the excellent article “General Electric’s Early Transistor Radio” by Steve Auyer in the 2014 *AWA Review*. Steve was very generous in sharing information and expertise on some of the GE transistor radios in my collection. My experience with repairing transistor radios is limited but I’ve repaired enough sets to be able to pass on some methods that have been successful for me.

It’s easy to acquire transistor radios because large numbers of them were manufactured and many models show up in garage sales, online auctions and swap meets. Quite often these still work okay.

Among the biggest advantages of transistor radios are their lower voltages, smaller power consumption and lower operating temperatures compared to tube radios. Generally speaking, this equates to lower failure rates of the parts.

My own experience in dealing with these radios is that the worst failures arise from corrosion around batteries that may have leaked and, occasionally, deterioration of electrolytic capacitors used in coupling and bypassing. I have replaced a few transistors in radios I’ve repaired but I don’t think this is yet a very common problem. The experiences I’ve had so far are with repairing radios made after about 1960; earlier sets



General Electric 8-transistor radio Model 1704B.

may have other problems. You can use a radio with a damaged case to practice and learn techniques for repair.

When first looking into a transistor radio, one is struck by the compactness and close quarters of the parts. Nevertheless, most early transistor radios, into the 1970s, have discrete components that can be individually removed and replaced. These include transistors, resistors, capacitors and transformers. Since the value of transistor radios to collectors depends on cosmetic condition, be careful not to damage the case and other parts if you decide to repair a set.

Try to find easy fixes first. As with tube radios, there are systematic ways to narrow the problem to one area of the circuit or to a particular component, but these procedures can be rather involved and might require some extra diagnostic equipment. Spend some time fiddling with the set before trying to identify a poor component. Be sure the batteries are making good contact and that the appropriate voltage is appearing where it should.

A schematic for the set will be invaluable to get an idea of the circuitry. Even if the set appears to be completely dead, work the controls to try to get at least faint response. Most radios I've dealt with show some signs of life without replacing a part—enough to go forward with some other tests to reveal where the problem is. You may find that the radio operates better after you've had it playing for a while, since electrolytic capacitors may eventually reform after being voltage is applied.

Before you attempt to replace components, make sure that you have the right equipment. A soldering iron with a small tip is needed to prevent damaging the circuit board and components with excess heat. I use a soldering station type that is temperature-controlled. Forty watts should be more than adequate, and there are many available irons at very reasonable prices.

You'll also need a method for removing parts by desoldering connections one at a time. Trying to unsolder two or three connections simultaneously is asking for trouble. If you do a lot of repairs, a suction or

pump desoldering device might be justified, but I use a braided, fine, copper wick, called desoldering braid. The wick is placed on the solder to be removed and heat is applied. The solder then melts and is soaked away by the wick. In this manner, the two or three connections holding most components can be freed individually and the part can be removed. This also leaves open holes in the circuit board so the replacement part can be quickly inserted and soldered in place.

I recommend having good lighting and maybe an inspection magnifier of some kind to help identify parts and the location of connections. Small tapered pliers or tweezers can be useful as a heat sink (clip to a component lead during soldering to divert heat from the component) or for removing and placing components. Generally if I remove, for testing, a transistor that is soldered in place, I definitely intend to replace it, since it may not survive the removal process. A few sets, like the Zenith 500H and some Transoceanics, may have transistors installed in sockets that permit their safe removal for testing, but most sets have the transistors soldered in place.

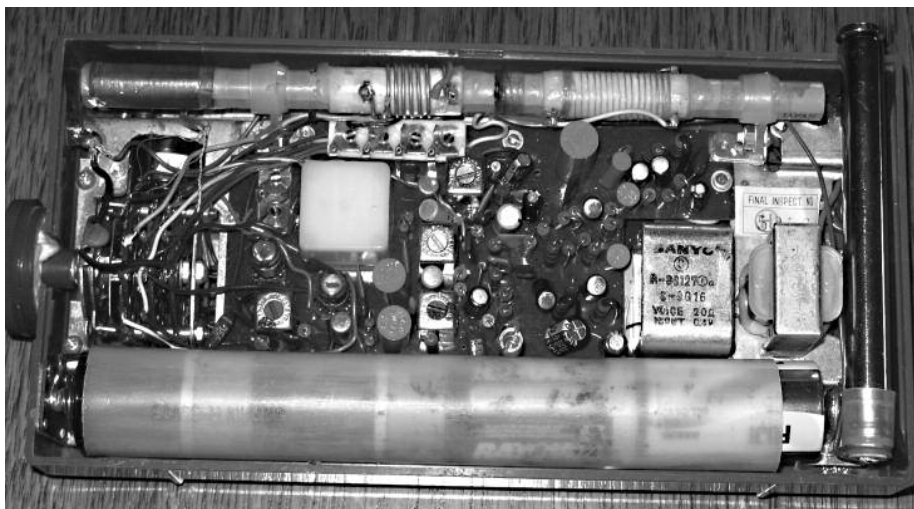
In many cases, your radio may have persistent distorted or weak output. Try to locate the stage of the set causing the problem. Having a signal generator and a separate audio amplifier on hand can help but that may not be necessary initially. The audio stage of another working transistor radio can be useful for checking if the RF stage of the set you're trying to repair is working ok. You can jumper the signal out of one to the other, using a capacitor to block DC. You could also use the RF/detector stage of a working radio to inject an audio or RF signal into the appropriate stage of the problem set. If the radio seems to tune stations fairly well but the audio is weak or distorted, look for the problem to be one of the coupling capacitors. Once I have a rough idea of where the problem is, I start looking for electrolytic capacitors as candidates for replacement. There may be several. Small electrolytic capacitors are very cheap so buy enough of these to offset postage costs for the number you might

eventually need. Typically the values found in early transistor sets are about 5, 10, 30 and 200 ufd at 6 to 25 volt ratings. More than likely the modern ones will be smaller than originals so a 25-volt rated capacitor will probably not be larger than an original 6-volt rated capacitor.

You can also check voltages using a DMM. Many schematics indicate voltages at selected points. The emitter to base voltage is typically 0.2 to 0.3 volts for Ge transistors (typically found in sets made before 1965) and about 0.6 to 0.7 volts for Si types

(typically found in later sets), but depends on circuitry in some cases. If you start looking at these voltages, you'll have to familiarize yourself with the pin arrangement for the types in your set, and this can be a tedious exercise. Be sure to make notes as you go and be careful not to short the transistor connections to one another as this can cause damage. Transistors are less forgiving than tube devices in this respect.

An example of the transition from Ge to Si is seen in two versions of the GE Model 1704, an 8-transistor set circa 1965. The



Channel Master Model 6523 10-transistor radio.

earlier “A” version has mostly Ge types in metal cans, while the “B” version has mostly Si types encapsulated in plastic. It’s interesting that two of the transistors in the “A” version, designated “injection regulator” and “detector,” are connected as diodes (emitter connected to base), whereas in the B version small glass-enclosed diodes were used for these functions. So as not to drop below its 10-transistor designation, the B version has two extra transistors in different locations. I’ve not been able to obtain a schematic for the B version so am not sure what the functions of these relocated transistors were and I haven’t traced the wiring on mine.

I repaired the GE 1704 B version by replacing one 3 ufd electrolytic coupling capacitor (replaced with 4.7 ufd) between two transistors in the audio stage. There are only three electrolytic capacitors in this set. As I recall, replacing the capacitor didn’t completely solve the problem, and I resorted to replacing the transistor that followed the capacitor. I will give more details on repairing the “A” version once I complete its repair. Currently it tunes across the broadcast band but squeals at some points and has weak and distorted audio compared to the repaired “B” version.

Another set that I repaired using the above approach was a 10-transistor Channel Master Trans-World Model 6523, circa 1960, which tunes the AM broadcast band and two shortwave bands. Though this is a rather large set, the parts on the circuit board are closely packed as in smaller sets and it has 13 electrolytic capacitors.

Once I replaced five electrolytic caps in the audio portion and AVC line of the radio, the volume increased quite a bit and distortion disappeared. The owner had a Sams schematic for the radio which helped considerably. It was a tedious job to disassemble the radio so the main circuit board could be removed for repair.

A few wires had to be disconnected and I made notes of pertinent locations to aid in reassembly. Close-up photos or sketches of the area could have also been helpful. Another tip: sometimes it’s easier to cut a long wire rather than unsoldering it at its end,

and then the cut can be spliced together and covered with shrink tubing during reassembly. The remaining annoying problem with this set is the volume control which is erratic but can be coaxed to produce clear sound by slight rotation. It seems to disappear as the set is used. Some spray cleaner on the volume control may help.

You may be happy keeping your transistor set with all original components if the set is otherwise in very good condition even if it doesn’t play as well as it should. I have an attractive Channel Master Model 6518 AM/FM 14-transistor set with case similar to that of my Model 6523. It plays pretty well though it has low volume. The set has 10 electrolytic capacitors and I suspect some of these are the culprits. I also have a Zenith Royal Deluxe from 1958 that barely tunes stations and squeals a lot. It has four electrolytics and the transistor are socketed. So far, I am content to be able to look at the original components and have not repaired these two sets. I may replace some of the electrolytics, restuffing their cases with new capacitors to retain the original appearance. But for now, the radios please me as-is. Your choice of whether to repair or not will also be a personal one.

There will always be problems that demand more than the simple repairs described here. I plan to present more details about how to pinpoint problems in a later article. Comments from readers are also welcomed and will be passed along. If you want to read more about transistor radio repair, I recommend the books in the following reference section.

REFERENCES

- Kiver, M.S., “Servicing Transistor Circuits,” Chapter 10 of *Transistors*, McGraw Hill, 1962.
- Lane, Leonard C., “How to Fix Transistor Radios and Printed Circuits,” Tab Books, 1969.
- Marcus W. and Levy, A., “Servicing Transistor Radios, Chapter 16 of *Practical Radio Servicing*, McGraw Hill, 1963.

RADIO REHAB 101

EDITED BY **DICK PARKS**, 2620 LAKE RIDGE CT., OAKTON, VA 22124
E-MAIL: dparks999@verizon.net. PLEASE INCLUDE SASE FOR MAIL REPLY.

The Western Electric 100-F Amplifier

You see these on eBay from time to time. They are very well-made AC/DC amplifiers designed for telephone use, monitoring a fairly low-impedance source over a built-in five-inch Jensen speaker. Apparently these amplifiers found wide use in railroad yards by yard masters who wanted to monitor phone lines without using headsets.

In spite of the fact that the 52 ohm input winding of the 282A transformer (see schematic) would be a pretty stiff load for most stereo amplifiers, there are audiophiles around the world who hook a couple of these up to their systems and happily listen to the “tube sound” over the little speakers. To read what a Singapore enthusiast thinks of the 100F, visit <http://vintagehifiexperience.blogspot.com/2007/01/western-electric-100f-klh-radio-set.html>

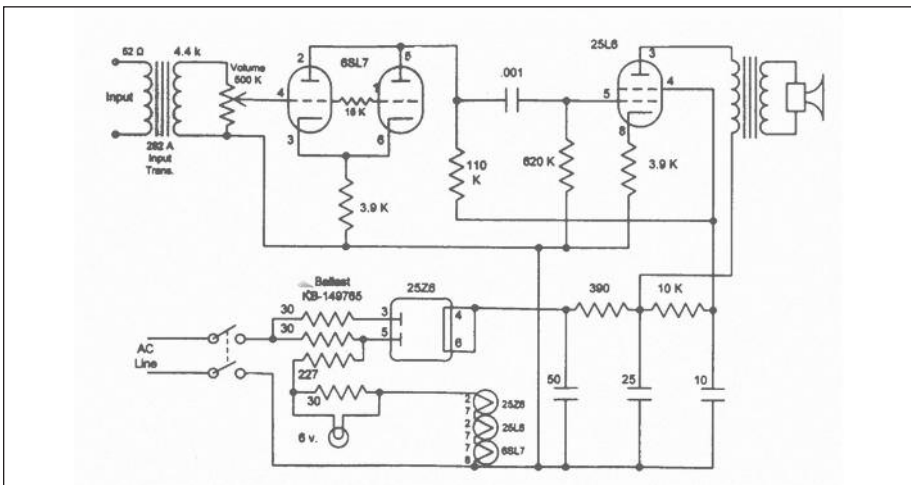


The Western Electric 100-F is a cute little set, but its reputation as a hi-fi amplifier is undeserved.

The absence of cathode bypass capacitors and the low value of the coupling capacitor to the grid of the 25L6 means this amp will have a pretty narrow audio bandpass.

On the good side, that cap is a mica part, so it's not likely to get leaky! The high-

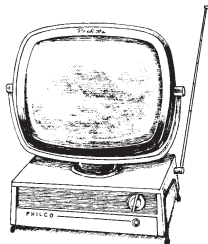
(continued on page 59)



Though the 100-F has an AC-DC power supply, the transformer-coupled input minimizes the danger of accidental shock that is a concern in such circuits.

TELEVISION

EDITED BY **RICHARD BREWSTER**, 145 LITTLE PECONIC BAY ROAD,
CUTCHOGUE, NY 11935 PLEASE INCLUDE SASE FOR REPLY.



Vladimir Zworykin's Lab Notebooks

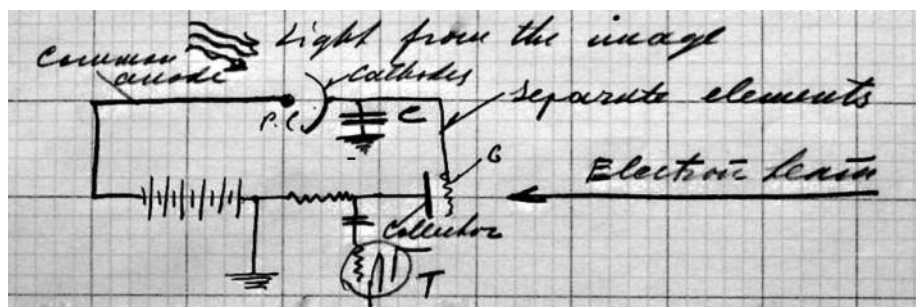
Some time ago, I spent hours photographing Vladimir Zworykin's lab notebooks at the Hagley Library. This document, the first page in what appears to be his earliest lab notebook, is probably the first of Dr. Zworykin's official reports developed since coming to work for RCA Camden, NJ, under the direction of David Sarnoff. Here, he details his latest plan for the design of his yet unnamed iconoscope. The plan is for a two-sided mosaic which would transmit twelve 100-line pictures per second.

In this note, he explains that he has decided to change from a 'common anode' to a 'common cathode' because of the diffi-

culty of preparing 'individual p.c. elements of equal sensitivity.' His reference to a previous design shows that he had been working on this tube for some time. He titled this entry: "New design of a cathode ray transmitting tube with multiple anode and electron accumulators." The notebook is #680, page 1, dated April 28th, 1930.

This article was created from material provided courtesy of the Hagley Museum and Library in Wilmington, DE.

The previous design of the cathode ray transmitting tube involved the multiple cathode. The elementary circuit diagram involved was as follows:



The light from the image affects continuously the cathode and charges the condensers 'C' during the whole picture interval P i.e. $1/12$ sec. The electron beam sweeps the elements G one after another during this interval of time P . The time when the beam is actually stays over an individual element G is p/n , where N is the number of picture elements. For 100 line picture N is equal to 10000 and therefore $p/n = 1/120,000$ sec.

During this period the beam discharges the capacity C making it ready for next charge from the $P = C$ current during the next picture frame interval.

At the same time the cathode beam passing G strikes the collector from where the charge is leading to the ground through the resistance R . If all G are alike this current will be constant. But as soon as the illumination of picture elements will be different as in any of the projected image, the condensers C will be charged to correspondingly different voltages and therefore elements G will produce the different charging potentials on the beam and consequently vary the electronic current through R .

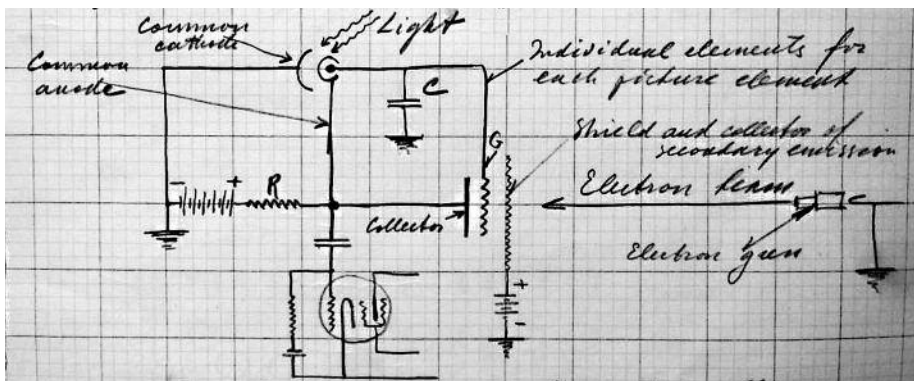
As a result the amplifying tube T will receive the impulses which will correspond to illumination of the picture.

The circuit was tested and result verified the expectation. In practice a band of 50 elements was assembled in a line. The biggest difficulty was the preparation of the individual p.c. elements of equal sensitivity.

In order to avoid that, it may be possible to work out the p.c. out of copper oxide and assemble the whole screen outside and then seal in the tube. The reversing of the circuit,

however, also helps to avoid this difficulty. In this case the anode becomes multiple and the cathode common for all picture elements. The principal circuit diagram for element became as follows:

Note: Here we see that Zworykin made a mistake! What he labeled as 'Common Anode' should actually be 'Multiple Anode'.



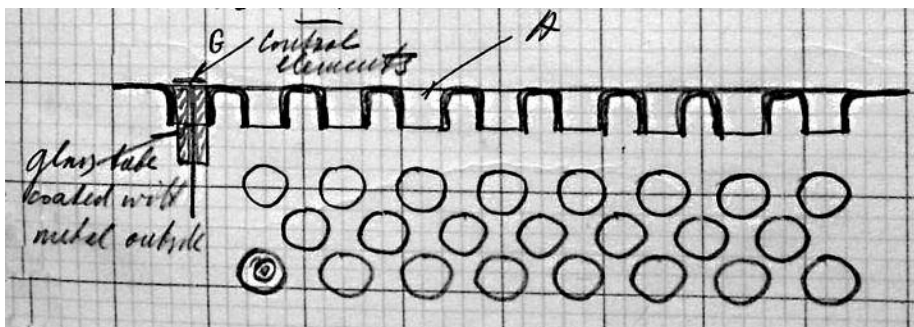
The electrons are emitted from the common cathode according to the image. They are attracted to the perforated anode placed close and parallel to the cathode. The electrons which pass the openings arrive to the individual elements G and charge C. The effect of this charge will be the same as described in the earlier scheme.

The charge of C's will be increased in that case by the secondary electron emission from the bombardment by the beam. For this purpose a positively connected

field is incorporated to remove the excess secondary electrons. The fast electrons of the beam will penetrate this shield suffering only slight uniform retardation.

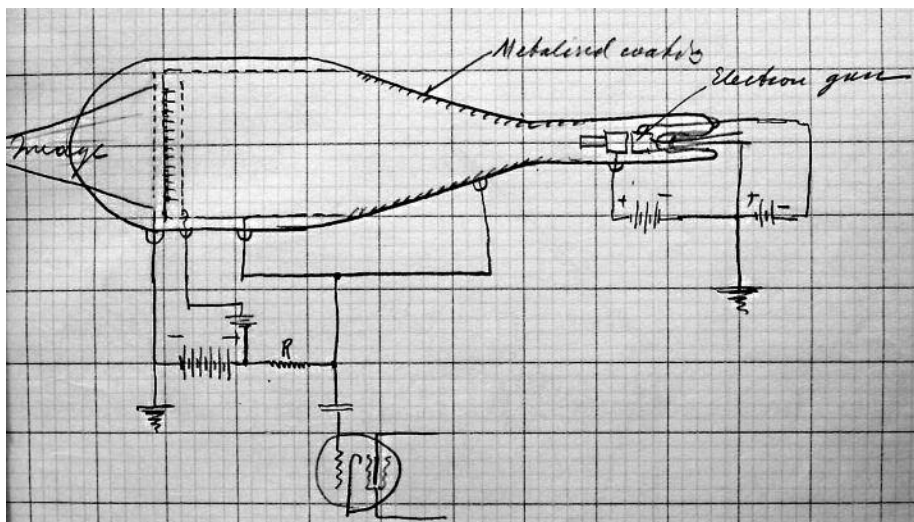
The practical construction is proposed as follows:

The anode and collector is represented by two sides of the same metal perforated plate A. In each hole is pressed a piece of glass tubing metalized outside. In the tubing is cemented wire with a flat plate on the end.



The wires constitute a condenser C with the metalized surface of the transmitting tube,

which in turn is electrical contact with A.
The whole tube structure is as follows:



Unfortunately, this didn't work out as he had hoped. Many iterations later, he had

a working Iconoscope with a one-sided mosaic.

RADIO REHAB, continued from page 56

quality parts that W-E specified for these sets means that most will work right off the bat without any help from the restorer. Still it's a good idea to bring up the line voltage slowly over a period of a half-hour or so to give the filter capacitor sections a chance to recover from what might have been a long sleep. The one I'm looking at right now has a 1956 date code.

This nice clean example needed nothing but a tube check and a dusting off to make it ready for a profitable recycling to some eager bidder on eBay. What you need to look for on these cute amplifiers is that the metal back panel has not been lost. Best of all is the presence of the original Western Electric decal on that panel.

Each of the 100Fs that have passed across my bench has had super-flexible telephone-style wires to make input connections. That seems to invite connection



Check for the presence of the manufacturer's decal on the back panel; its absence reduces the value of the set.

across a telephone line. But don't do it! At the least you first need to install a blocking capacitor to remove the DC voltage present on the line.

KEY AND TELEGRAPH



EDITED BY **JOHN CASALE**, W2NI, 35 PICKERING LN, TROY, NY 12180,
casalejj@yahoo.com PLEASE INCLUDE SASE FOR MAIL REPLY. © 2016, J. CASALE

A Western Union/Phelps Combination Set and The Haskins Brothers of Littleton, New Hampshire

About 15 years ago, a unique early Western Union telegraph set surfaced at an auction in Maine. Since that time, it has passed through a few collectors' hands. It was manufactured by the Western Union Company at their factory in New York City during the years of 1866-1879, when George M. Phelps was the superintendent. I thought it would be appropriate to photo-document the set in the *Journal* and research the name of "W.A. Haskins" shown on the interesting metal plaque that is attached to it.

To the best of my knowledge, no other "Phelps" set like this has surfaced before. What makes it unique is, first, that it has three instruments: a key, sounder and relay on a small base that measures $4\frac{3}{4} \times 10\frac{1}{4}$ inches. Second, the individual instruments are roughly 25 percent smaller in size than the standard full-sized versions found in Western Union offices at that time. And finally, the set does not have a serial number. All the individual instruments manufactured at the Western Union, New York shop typically had serial numbers that were carefully recorded before being shipped.

It is true that other manufacturers (especially later) built three-instrument "combination sets." However, they are uncommon from a Western Union shop of this era. The only other WU combination sets (pre 1879)

that I have seen were by the Western Electric Manufacturing Company of Chicago and the Western Union shop in Louisville KY with Superintendent Wm. H. Johnson markings. Unlike this Phelps set though, they had full-sized instruments mounted on the base and serial numbers.

The questions in my mind are why did W.A. Haskins own this unique piece? Was he a telegrapher with a Western Union connection? Did he purchase the set directly from Western Union? Was it possibly presented to him as a gift for his service or at his retirement?

In researching "W.A. Haskins" I found that William Arthur Haskins resided in Littleton, New Hampshire during the years 1865-1893. He was born in Farmington Falls, Maine on June 20, 1845. He is listed as working as an express messenger and agent in Littleton, NH during the years this Phelps set was manufactured. (1866-1879).

The express business and the railroads



The Phelps combination set.

went hand-in-hand during the 19th century. Express agents handled the coordination of freight, parcels, bank transfers, etc. at a rail station. They determined the routes packages would take and physically moved freight from train to train. At some stations, especially smaller ones, it was not uncommon for an express agent to have multiple roles including being a telegrapher.

It is amazing sometimes what you can discover when researching these articles. It turns out William Haskins had a younger brother, Charles Darwin Haskins. It was Charles who had the Western Union connection.

Charles was born in New Hampshire on October 9, 1853. He started out as a telegrapher in Littleton, NH at the age of 13. During the 19th century, it was not uncommon for teenagers to be employed as telegraphers. Charles quickly advanced to assignments at larger telegraph offices in Portland and Bangor, Maine before ending up in Boston.

As a school boy, Charles had excelled in physics. When he arrived in Boston, at the



The plaque bearing W.A. Hoskins' name.

age of seventeen, he was hired to work in the telegraph factory of Charles Williams, Jr. The Williams shop was known for building models for aspiring inventors and Haskins was assigned to work with inventor George B. Stevens, who was designing a duplex telegraph system.

In 1872, at the age of nineteen, he moved to New York and was hired by Western Union to be a foreman in the company's factory, working under George M. Phelps. At that time, the factory was located at 62 New Church Street in New York City and employed approximately 180 workers. While a foreman, he assisted with some of Western Union's construction and factory testing of new quadruplex and duplex instrument designs.

When Western Union sold its factory to the Western Electric Manufacturing Company in 1879, Charles stayed with Western Electric as one of their factory superintendents. He became an advisor to Western Electric's president, E.M. Barton. During the period from 1882 to 1896 he filed for a variety of telegraph and electrical patents, most of which were assigned to Western Electric. Two of them



Markings are partly visible between the threaded rod and the key's rear adjustment screw.

were associated with quadruplex telegraphy. Another was for an “Electric Resistance Indicating Device” used for testing telephone circuits and was co-filed with Charles E. Scribner, another Western Electric engineer who was well known for his work in the telephone field.

In 1884, he was listed as being one of the original members of the American Institute of Electrical Engineers. He was the only electrical engineer on the list from Western Electric. The original members included several men who were prominent in this country’s telegraph and electrical industry at that time.

Charles was associated with the manufacturing at Western Electric until 1889, when he moved into Western Electric’s law office as a patent expert. In that capacity he was involved in a wide range of electrical inventions. He later moved to Seattle and became a respected patent attorney on the West Coast. He passed away in Seattle in 1918.

This Phelps set is in remarkable shape for its age. Besides one missing binding post, everything else is original. The hardwood base is mounted on a nickel plated sub base. The base of the sounder is also nickel plated. The only markings on the instrument, other than on the plaque, are “W U Tel Co” and “G M Phelps” on the lever of the key. The binding posts are smaller versions of the style Phelps was using in his later years including on some of his printing telegraph instruments.

The set does not appear to have seen much service and was kept protected for many years. A combination set like this could have been used as a portable, self-contained telegraph office. Or an argument could be made that, because of its small, exquisite design, it was custom-made for a very special office or person.

I could find nothing to document why William owned it. It is certainly plausible that his brother might have had it built for



A size comparison of levers from a full-sized Phelps key (top) and the Phelps combination set.

him and/or presented it to him. With the Haskins family having roots in both New Hampshire and Maine, it is not surprising that this set turned up at a Maine auction. It possibly came from an estate of a descendant of the family. Hopefully, if a descendant should come across this article someday, they will see that the set is still being admired as it undoubtedly was when it was new.

SOURCES

- Illustrated Electrical Review*, June 22, 1918
Nome and Seward Peninsula, History, Description, Biographies and Stories, E.S. Harrison, The Metropolitan Press, Seattle, 1905.
History of Littleton, New Hampshire, George C. Furber, 1905.
New Hampshire Register, Farmers Almanac & Business Directory, The Claremont Manufacturing Co. 1880
Exercises at the Centennial Celebration of the Incorporation of the Town of Littleton, July 1884, Published by the Town of Littleton, 1887
History of the Express Business, A.L. Stimson, Baker & Godwin, New York, 1881.
The Papers of Thomas Edison, Digital Version, Rutgers.
U.S. Patents of Charles Darwin Haskins, 1882-1896.
Washington State Board of Health, Death Certificate, Charles Darwin Haskins, February 5, 1918.

NOW AVAILABLE FROM THE AWA MUSEUM STORE

— All profits are used to support the Museum —

Many other AWA items and a Museum Store order form are available on the AWA website at: <http://www.antiquewireless.org/museum-store1.html> NOTE: A printed copy of the order form is available on request (see **Ordering Merchandise** section below).

PUBLICATIONS AVAILABLE ON CD

BOOKS

The most popular *AWA Review* ever produced, the *Atwater Kent Story* by Ralph Williams originally issued as *AWA Review* #12, is available as a CD. Price is \$15, postage paid in U.S.; elsewhere, add \$5.

Another out-of-print classic, *The Hallicrafters Story* by Max De Henseler, HB9RS, is also back as a CD. Max De Henseler was a personal friend of Hallicrafters founder Bill Halligan, and his book provides unusual insights into Halligan's life and early struggles. This well-illustrated book has 245 pages, a nice Index and several handy lists of models and features. Price is \$15, postage paid in U.S.; elsewhere, add \$5.

THE AWA JOURNAL (OTB)

Volume 1 (Contains all issues from January, 1960 - March, 1985)

Volume 2 (Contains all issues from June, 1985 - November, 1996)

Volume 3 (Contains all issues from February, 1997 - November, 2011)

Price for one volume: \$36 US, postpaid in U.S.; elsewhere, add \$5

Price for any two volumes: \$65 US, postpaid in U.S.; elsewhere, add \$5

Price for all three volumes: \$99 US, postpaid in U.S.; elsewhere, add \$5

TELEGRAPH ANTHOLOGY

Contains every telegraph article ever published through 2004 in *The Old Timer's Bulletin* (now *The AWA Journal*) and *The AWA Review*. In addition there are photos from the "lost" Stu Davis Museum collection, an unpublished article by Lou Moreau on military keys, and the long-awaited update of the "Early Telegraph Makers" list by Roger Reinke. There are three ways of browsing the content of this CD: The chronological list of article titles, a subject index and an author index. Compiled and edited by Prof. Tom Perera, W1TP. Price is \$15 postpaid in U.S.; elsewhere add \$5.

AWA REVIEWS

Now you can acquire these scarce out-of-print volumes for your library. Volumes 1-5, Volumes 6-10, Volumes 19-24, and Volumes 25-26 are available on four CDs. Price for one CD, \$20 US; any two CDs, \$35; or all four CDs, \$70, postpaid in US. Elsewhere, add \$5.

AWA PIN.....

Antique Wireless Association name and logo in gold lettering on a dark blue cloisonné background; 1" in diameter; clutch mounted. Price: \$6 U.S., elsewhere, add \$3

AWA JOURNAL (OTB) and REVIEW BACK ISSUES.....

See a list of available back issues on the Museum Store Order Form (see below).

ORDERING MERCHANDISE

The Museum Store Order Form and current list of available merchandise is available for download on the AWA website at: <http://www.antiquewireless.org/museum-store1.html> or by writing Stan Avery at P.O. Box 421, Bloomfield, NY 14469. **Make checks out to "AWA Museum" and send to AWA Museum Store at the same address. Contact Stan with any questions about Museum purchases.**

THE BACK PAGE

Interesting Images from the AWA Museum Archives

BY **JAMES KREUZER**, N2GHD, MEDIA LIBRARIAN



Discarded Phono Record Becomes Radio Panel!

From a press release accompanying this photo and dated April 9, 1924, we learn that Miss Elma Madsen, is displaying a radio connected to a "Serenada" loudspeaker and with a front panel made from an old phonograph record. She is showing it at the Radio Show and Convention that had just opened at The Hotel Pennsylvania in New York City — the first radio show of the year. The record was discarded after the family "talking machine" was replaced by a radio set.
